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Membership

Supplement to
American Antiquity
Vol. XVIII, No. 2, October 1952

Membership

With this issue, the Society for American Archaeology is opening a membership campaign to acquaint individuals and institutions interested in American Archaeology with the Society's program and publications. This membership campaign is of considerable importance at the present time. While the Society has had a slow and steady growth, without any attempt at promotion, from its founding in 1935, the membership does not, by any means, adequately represent the large number of people in the country who are interested in American archaeology. As a national organization the Society is committed to a program which is clearly outlined in Article II in the Constitution.

> *"The objects of the Society shall be to promote and to stimulate interest and research in the archaeology of the American continents; to encourage a more rational public appreciation of the aims and limitations of archaeological research; to serve as a bond among those interested in American archaeology, both professionals and non-professionals, and to aid in directing their efforts into more scientific channels; to publish and to encourage the publication of their results; to foster the formation and welfare of local archaeological societies; to advocate and to aid in the conservation of archaeological data; and to discourage commercialism in the archaeological field and to work for its elimination."*

Hundreds of people with an active interest in archaeology who are not now members can subscribe to these objectives without reservation. One of the Society's aims is to reach, inform and even reform individuals and organizations whose activities endanger archaeological resources. If the Society is to achieve this objective, we must enlarge the body of active supporters of archaeology.

The Executive Committee with the approval of the members present at the Annual Meeting in Columbus, Ohio, May 3, 1952, instructed the Secretary to initiate a membership campaign over the next two year period. To that end, the Secretary has enlisted the support of individuals throughout the country who will act in effect as state and regional chairmen and who will stimulate other individuals within their area to enlist interested people in actively supporting the Society's program. This campaign however cannot be a success unless the entire present membership will take an active hand. Members should see that their friends and associates who have a natural and sincere interest in the furthering of scientific archaeology are acquainted with the benefits of a strong national organization, as well as the value to the individual through the regular receipt of *American Antiquity* and the *Memoir* series. To this end there is included in this issue of *American Antiquity* a membership blank which it is hoped each member will send to the Secretary with the name and address of a new member plus a check for a first year's subscription.

The present membership is not adequate to guarantee the continuation of *American Antiquity* in its present form at the current price of $6.00 per year. The membership dues go to publish the *American Antiquity* and the *Memoir* series. The cost of printing always exceeds the amount collected from dues. Charges for excess engraving, sale of back issues, and occasional gifts keep the society solvent. (See Annual Treasurer's Report in No. 2 of each volume.) Perhaps

no other national society has such a high percentage of its total income translated into publication instead of promotion or personnel. If our membership rolls can be substantially increased, the membership dues can be kept at their present rate. The active support of every member is therefore needed in order to insure the continuation of *American Antiquity* in its present, or an improved, size and format.

The Society for American Archaeology is open to both professional and non-professional archaeologists. *American Antiquity* has published many articles and notes submitted by non-professionals and welcomes the valuable information that is possessed by the great non-professional group in this country. At the same time the Society and its journal does not fill the same need as do the state or regional archaeological societies and cannot be considered as competing with such organizations. However, many of the local societies also have an active interest in American archaeology as a whole. Frequently these people are not even aware that they are eligible for membership in the national Society. Mature, sincere part-time students of archaeology are particularly desirable and welcome as members of the national Society.

The only bar to membership is a reasonable one. Dealers and other active buyers and sellers of objects from America's prehistoric past are not supporters of the Society's aims and program, and are therefore ineligible for membership.

The potential membership of the Society for American Archaeology is variously estimated; 3,000 is the minimum figure generally agreed upon. There are also hundreds of institutional and municipal libraries which should subscribe to *American Antiquity*, but do not. These institutional memberships are particularly valuable because they provide a core of prompt-paying and continuing support. Institutions also usually try to obtain as complete a back file of the journals as possible; such sales of back numbers and *Memoirs* keep the society out of the red.

The following individuals have been asked to collaborate with the Secretary in the membership campaign, with special emphasis on the area indicated:

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Additional subscription blanks may be obtained from the Secretary of the Society.

JAMES B. GRIFFIN

AMERICAN ANTIQUITY

VOL. XVIII OCTOBER, 1952 No. 2

CERAMIC DEVELOPMENT IN THE SOUTH APPALACHIAN PROVINCE

WILLIAM H. SEARS

THE "SOUTH APPALACHIAN Province," an area defined by the occurrence of the complicated stamp as a major mode of pottery decoration, was outlined by Holmes (1903). Almost nothing can be added to the area definition propounded by Holmes. Actually the area varied in size as it expanded and contracted through time (the temporal factor was necessarily omitted in 1898). Although the province varied in size, it should perhaps be reduced in size to include only the core area—the present state of Georgia with the addition of northern Florida. Areas outside this used complicated stamping only at certain time periods, and in all cases these usages appear to be stylistic imports from Georgia, not local developments.

The origins of complicated stamping remain unclear. A number of possible ancestors have been proposed, among them Hopewell bone carving (Griffin, 1946) and West Indian woodwork (Holmes, 1903). Probably the evidence will never permit of any degree of certainty. However, I might offer as an alternate hypothesis the use of stamps originally designed to apply paint to the body. Such stamps, common in the tropical forest regions of South America, including one specimen which would produce Etowah Complicated Stamp recently collected in Bolivia (Metraux, 1948), might have been used for some time in Georgia before a sudden thought shifted their use to pottery as well as posteriors. However the idea may have been developed or introduced, designs and usage follow recognizable evolutionary courses in the province after their decidedly abrupt appearance.

Data accumulated over the past fifteen years (Kelly, 1938; Jennings and Fairbanks, 1939; Caldwell, 1941; Wauchope, 1948 and 1950; Smith, 1948; Willey, 1949; and others) make it quite clear that there are two major styles in complicated stamping, each distinctive of a particular area within the province. Although evolution in each style follows a course roughly parallel to that in the other, the two remain distinct throughout the total time span covered, from the beginning of the middle Woodland period until quite late in historic times.

In the northern part of Georgia, the South Appalachians and their foothills, particularly in the Etowah and other east-west drainage systems, complicated stamps are almost invariably designed with strongly angular motifs. In the southern part of the province, the Atlantic coastal plain, including the northwest Florida and Georgia coasts, the designs are curvilinear. The dividing line is not, of course, perfectly sharp and clear. Occasional angular stamps appear in the south, as St. Andrews Complicated Stamp in Florida and southwest Georgia (Willey, 1949). Occasionally, probably as a result of population movement, curvilinear stamps appear in north Georgia. Perhaps the best example of this latter exception to the rule is the late appearance of Savannah and Wilbanks Complicated Stamps in the Etowah drainage. These matters will be discussed in some detail below. I might indicate here, however, that it is precisely these exceptions, indicative of cultural contact and movement, which produced the parallelism in stamp design development to be outlined.

The southern tradition begins with a type called Early Swift Creek Complicated Stamp (Kelly, 1938; Jennings and Fairbanks, 1939; Willey, 1949). Jennings and Fairbanks did not separate the early and late forms. The type is characterized by the use of jars with slight neck constriction and slightly flaring rims, notched or scalloped lips, and tetrapod bases with small bump or teat-like feet. Stamps are applied carefully over the entire vessel exterior with little or no overlapping. Stamp motifs are complex, small, but neatly carved employing many fine, narrow, and rather shallow lands and grooves in the delineation of each motif.

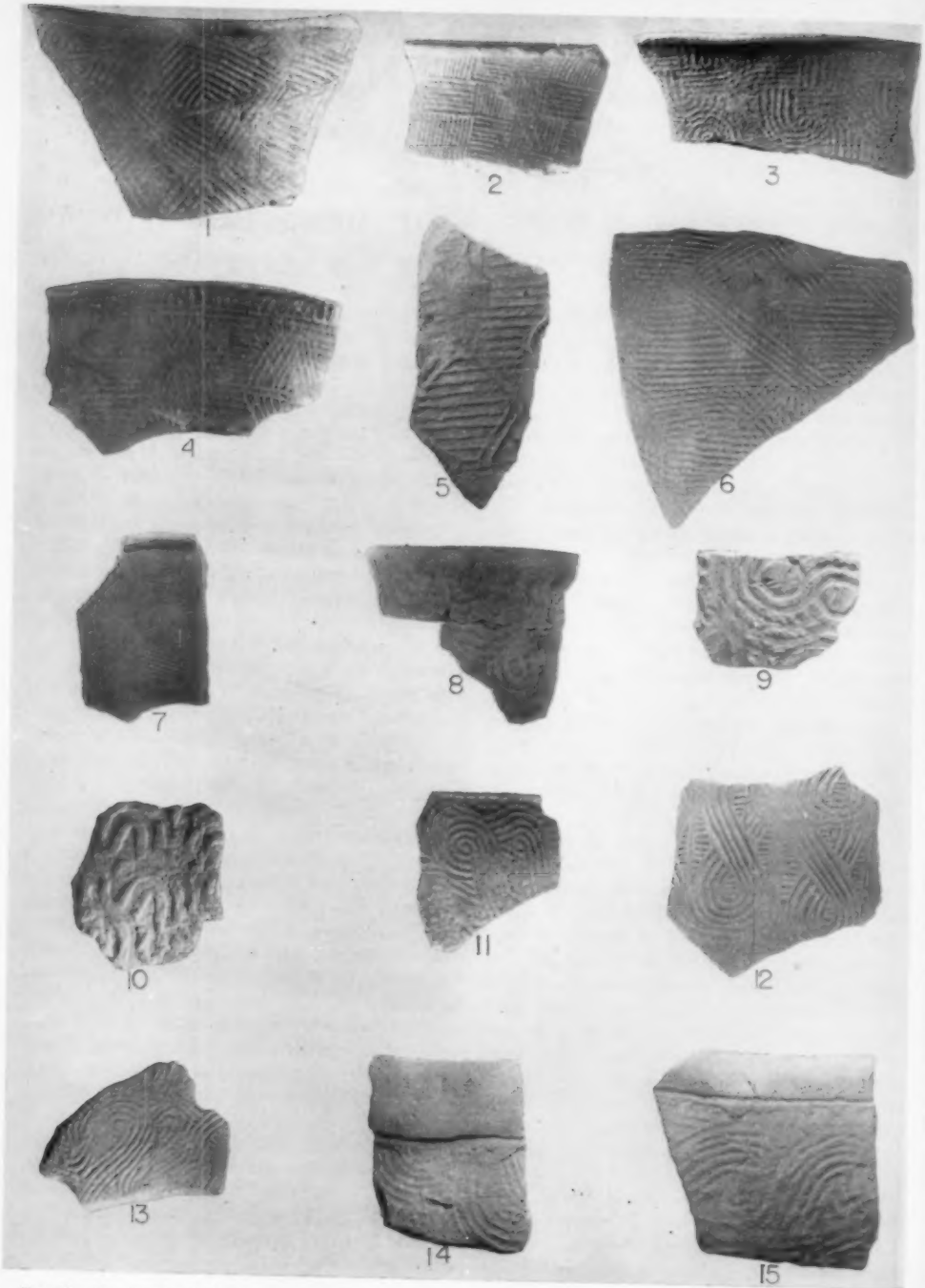

FIG. 51. South Appalachian stamped pottery types. Etowah complicated stamp; *1*, 2-bar diamond; *2*, line block; *3*, filfot cross; *4*, ladder base diamond; *5*, Woodstock complicated stamp; *6*, *7*, Napier complicated stamp; *8*, Lamar complicated stamp; *9*, *10*, Wilbanks complicated stamp; *11*, *12*, Kolomoki complicated stamp; *13*, early Swift Creek complicated stamp; *14*, *15*, Swift Creek II period complicated stamps.

Usually two or more motifs are employed in each stamp in addition to a number of smaller "fill" elements used to fill in blank spaces, connect the major motifs, and round off or square off the total stamp (Figs. 51, 52).

It will be recognized that the vessel form employed in early Swift Creek pottery is basically the same as that employed in pottery of the Deptford complex, an early Woodland manifestation which is distributed over the entire South Appalachian province. (Caldwell and Waring, 1939; Griffin and Sears, 1950. Further distribution data from collections on file, Department of Anthropology, University of Georgia.) It is almost certain that early Swift Creek developed from the Deptford series through the rather sudden adoption of the curvilinear complicated stamps concurrently with dropping the check and simple stamps. Such a derivation then places early Swift Creek in the middle Woodland or Hopewellian time period.

Other evidence for this temporal and cultural allocation comes from Florida. Early Swift Creek is the dominant type in the Santa Rosa-Swift Creek complex, in which it is associated with Santa Rosa Stamped and Alligator Bayou Stamped, rocker stamped types of certain Hopewellian affiliations. In burial mounds, it is also associated with a few Hopewell artifacts, particularly monitor pipes (Willey, 1949).

Well to the north, a clay tempered variant of early Swift Creek, Mann Complicated Stamp is found in Posey County, Indiana (Adams, 1949; Black, Glenn A., personal communication). In Posey County this type is found associated with the local middle Woodland types on a site related to burial mounds which contained rather elaborate Hopewell copper artifacts.

A final point is the association of complicated stamps and check stamps in the midwest. Generally complicated stamps of early Swift Creek type have been found in classic Hopewell sites, while the check and simple stamps, related to the Georgia Deptford period, have been found with Adena (Griffin, 1946).

At the type site, middle Swift Creek Complicated Stamp evolves directly out of the early variety (Kelly, 1938, n.d.) the separation being an arbitrary, but definitely necessary, one. Presumably the material will eventually be formally described as middle Swift Creek Complicated Stamp. However, this type, which may be precisely defined from the type site collections, does not characterize the entire province. There are many collections containing pottery which, while obviously related, is sufficiently distinctive to require its description and handling as a series of separate types. This has been done in a few cases from sites on the fringes of the province. Pickwick Complicated Stamp (Haag, 1939) in the Pickwick Basin and Tampa Complicated Stamp (Willey, 1949) from Florida are two which might be mentioned. In Georgia proper one variant is associated with Weeden Island series types at Kolomoki (Sears, 1951) and still another is known from a nearby site (Sears, 1950). Others are represented from all over south Georgia in collections in the University of Georgia, Department of Anthropology files, including at least one from the Jim Woodruff Reservoir, some forty miles south of Kolomoki.

The position of these various Swift Creek II relatives was recognized at the Knoxville meeting of the Southeastern Archaeological conference in 1950 by the establishment of Swift Creek II as a ware (Haag, 1951) characteristic of the southern portion of the South Appalachian province during the early Woodland and middle Woodland-early Mississippi transition periods.

Vessel and rim forms remain more or less constant in all Swift Creek II ceramics, the basic vessel form being that of early Swift Creek pottery without the tetrapods. In place of lip scalloping or notching, the folded rim makes its appearance, the fold becoming broader through time (Kelly, 1938, n.d.; Sears, 1951; Jennings and Fairbanks, 1939). Stamping is extremely variable, the variability presumably being a co-efficient of both time and space. Total stamps are simpler than in the preceding period, since one motif is either obviously the central one, in some collections, or is repeated two or more times in other collections. Examples of the latter type are illustrated in the Kolomoki report for the 1948 season (Sears, 1950). Specimens of other variations are illustrated on Figures 51 and 52. Fewer lands and grooves are employed in the delineation of each motif than was the case in early Swift Creek stamping, and fill elements are fewer and simpler. Impression of the stamp ranges from very light, particularly in southwest Georgia, to very clear and distinct further north around Macon.

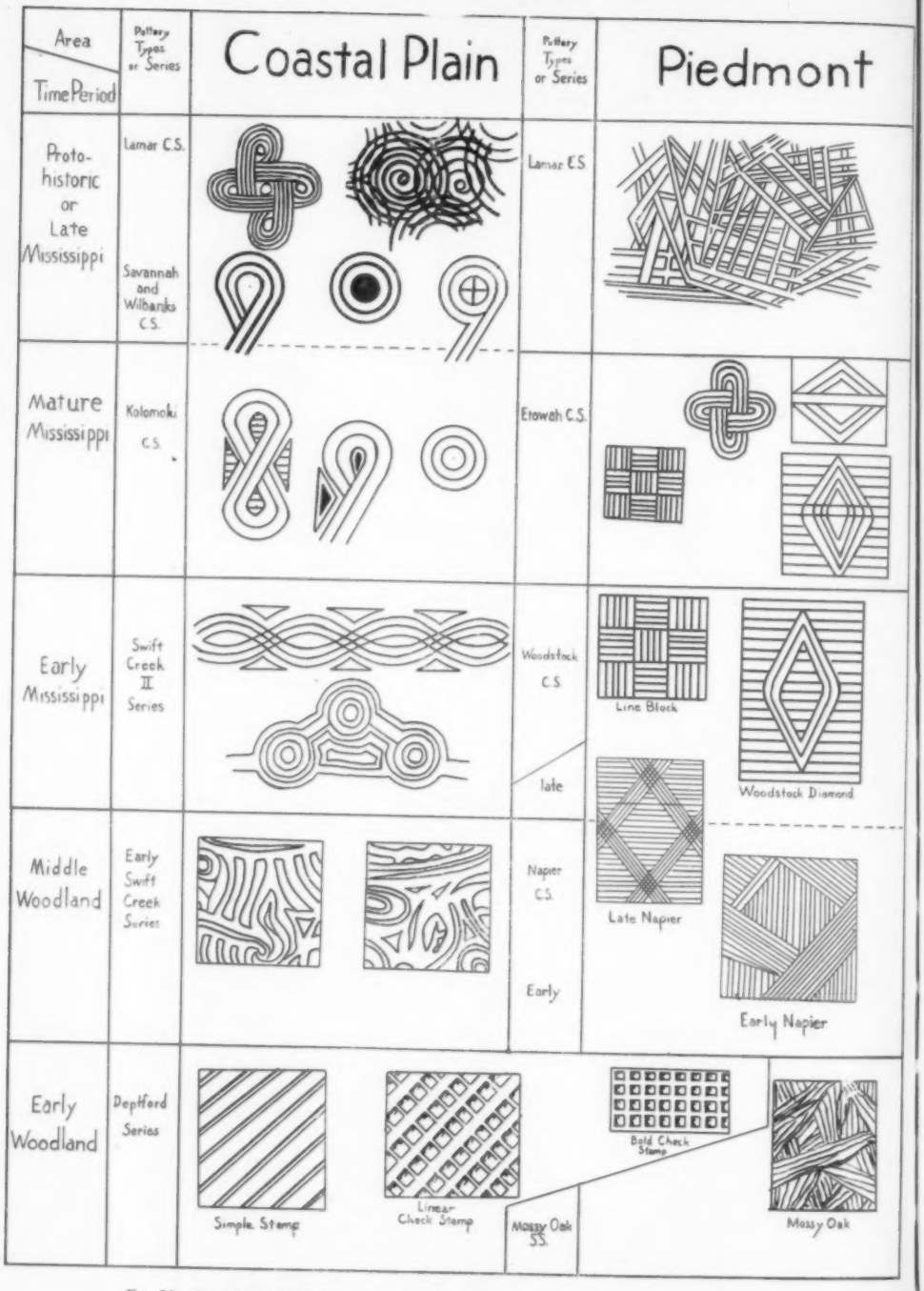

FIG. 52. Complicated stamp design development in the south Appalachian province.

In the period of fully developed or "mature" (Sears, 1950, 1951, n.d.) Mississippi culture, only two complicated stamped pottery types, both found in southwest Georgia and northwest Florida have been described, although again relatives are present in the collections at Athens. The two types are Kolomoki Complicated Stamp (Sears, 1951) and Mound Field Complicated Stamp (Sears, 1950). Both carry the already evident trend toward simplification, dropping of fill elements, larger size, and greater symmetry a step further. In the Kolomoki type, one motif is always obviously central, is carved using only two or three lands and grooves for the major outlines, lands and grooves which average much heavier than those employed in any Swift Creek II variant, and uses few and small fill elements. The commonest motifs (Fig. 52 and Fig. 51, *11, 12*) are scrolls of several varieties, bullseyes, and scrolls or figure eights with parallel bars in the loop termini which form snowshoes. These relatively simple stamps are placed on the shoulder area of small vessels with disc shaped or square flat bases. The rim form is variable. The most distinctive form is that in which a plain band on the rim above the stamping culminates in a narrow, neatly molded extrusion. Slightly more frequent are rims in which the extrusion is present without the plain band (Sears, 1951). The vessel form, rim form, and location of the decoration are all characteristic of lower Mississippi Valley Coles Creek-early Plaquemine pottery (Ford and Willey, 1939; Ford, 1951) although the stamping itself is obviously following a predictable development in the indigenous tradition.

Mound Field Complicated Stamp (Sears, 1950) is similar to the Kolomoki type in many respects. There is a tendency toward more complex stamping, and, by definition, the type uses a wide mouthed bottle as the sole vessel form. This type seems to have its inception earlier than Kolomoki Complicated Stamp. A few sherds of the type are found associated with sherds of the Swift Creek II genre at the Howell site, about ten miles down stream from the mouth of Little Kolomoki Creek (Sears, 1950a). At this site, and in other cases, the stamping itself, if found only on sherds which did not indicate the zoning or vessel form, would be classified as Swift Creek II.

Both the Kolomoki and Mound Field types are found at a number of Florida northwest coast sites as well as at Kolomoki. In Table 5, based on inspection of photographs in C. B. Moore's works and on inspection of vessels in the museum collections indicated, is as full a list as I have been able to assemble thus far of sites with the Kolomoki type. In Sears (1950a) I have commented on these specimens and their deviation from the ideal type.

TABLE 5

SITES IN NORTHWEST FLORIDA—SOUTHWEST GEORGIA WITH KOLOMOKI COMPLICATED STAMP

Site	*Reference*
Holley	Moore, 1902. Figs. 64, 65
Porters Bar	Moore, 1901. Fig. 201 R. S. Peabody Foundation, Andover. Nos. 39323, 39048, 39255
Tucker	Moore, 1902. Fig. 223 R. S. Peabody Foundation, Andover. 39031, 39107, 39101, 39025, 39014
Hall	Moore, 1902. Fig. 276 Heye Foundation Annex. Nos. 17/4509, 16/3350
Mound Field	Moore, 1902. Fig. 325 Heye Foundation, Exhibit No. 17/4909
Warrior River, Mound A	Moore, 1902. Fig. 325 R. S. Peabody Foundation, Andover. Nos. 39334, 38988
Warrior River, Mound B	Moore, 1902. Fig. 334
Bird Hammock	Heye Foundation Annex. No. 8/3254 Collections Department of Anthropology, Fla. State University, Tallahassee.
Hardnut Landing	Heye Foundation Exhibit Nos. 17/3254, 17/5146
Lewis Place	Moore, 1918. Fig. 37 Heye Foundation Annex No. 8/3269
Mound Near Point Washington	Moore, 1901. Fig. 69
Kemps Landing	R. S. Peabody Foundation, Andover. No. 39922
Marsh Island	R. S. Peabody Foundation, Andover. No. 39922
Munnerlyns Landing	Moore, 1902. Figs. 25, 26
Chipola Cut Off	Moore, 1903. Fig. 120
Tarpon Springs	Holmes, 1898. Plate CVIII

At Kolomoki, both the Kolomoki and the Mound Field types are found in village deposits in which Weeden Island types are lacking (Sears, 1951a) and in burial mound mortuary deposits associated with nominally Weeden Island types (Sears, 1951b). At this same site, the village area in which Kolomoki Complicated Stamp is almost the sole decorated type is associated with a large temple mound situated at the end of a plaza.

It is safe to predict that other pottery types related to Kolomoki Stamped will eventually be isolated to the east and north of Kolomoki. Thus far, little has been done in the relevant areas, and we can only be sure that the tendencies toward simplification of stamps, larger size of stamps, and so on, necessary steps in the

evolution of Swift Creek II stamping toward that of the protohistoric period, were not limited to Kolomoki.

The next type to be considered, Savannah Complicated Stamp (Caldwell and Waring, 1939; Caldwell and McCann, 1941) in all probability developed from one of these as yet undiscovered relatives of Kolomoki Complicated Stamp. On the basis of the stamping alone, the Savannah type could have developed directly from the Kolomoki type, since Savannah Complicated Stamp as a rule uses only the scroll, bullseye, or figure eight in its inventory of motifs, an inventory derivable from that of Kolomoki Stamped by simply dropping the more elaborate motifs in the Kolomoki series. Other than the lack of elaborate motifs in Savannah Complicated, the major differences between the two types are lack of fill elements in Savannah Stamped plus the use of heavier lands and grooves. However, Savannah Complicated Stamp vessels are stamped over the entire vessel exterior, using as vessel form a round bottomed pot with rounded shoulders, rather strong neck construction, and definitely flaring rim. Since in southwest Georgia the development seems to have been toward the restriction of the stamp to the shoulder or neck area, we may suspect that Kolomoki Complicated Stamp is out of the direct line of development toward Savannah Complicated Stamp. I might also point out that the southwest Georgia equivalent of Savannah Complicated Stamp is still missing, since the next definitely placed type in the area is Lamar Complicated Stamp (Sears, 1951a), two jumps up the ladder from Kolomoki Stamped, typologically and temporally.

Rather surprisingly, the best evidence for the temporal placement of Savannah Complicated Stamp comes from the northern part of the province, normally an area characterized by stamping in the angular tradition. In the Etowah valley, both Savannah Complicated Stamp and a close relative, Wilbanks Complicated Stamp (Sears, 1950b, n.d.) have been found at a number of sites, definitely indicating cultural intrusion from the south into this region which is normally dominated by stamping in the angular tradition. Wilbanks Complicated Stamp differs from the Savannah type in the use of even heavier stamping, and, on the whole, simpler stamp motifs (Figs. 51, 52). At one site, CK 5, a midden deposit containing only this type and a plain ware overlies a midden and structure with Etowah Complicated Stamp as the important type, and is under a level with Lamar ceramics (Sears, 1950b, n.d.). The Etowah type will be discussed shortly, but I should point out here that in this area Etowah Complicated Stamp is diagnostic of the period of large temple mounds, fully developed Mississippian culture, and the Southern Cult. Lamar, on the other hand, is protohistoric. Since Savannah Complicated Stamp at the Irene site immediately precedes Irene Complicated Stamp (Caldwell and McCann, 1941), the local Lamar variant, the Savannah type is well tied down in time. Probably the Wilbanks type noted above developed from Savannah Complicated Stamp. As noted above, the main differences are that the Wilbanks type uses heavier and simpler stamping on the whole, although one rather elaborate motif occurs (Sears, 1950b).

Lamar Complicated Stamp (Jennings and Fairbanks, 1939) is the diagnostic type of the protohistoric or late Mississippian period in this area, as well as of the early historic period. Only general characteristics will be mentioned here, since the type must be discussed again with the angular tradition. Generally speaking, Lamar is characterized by simple stamp motifs, heavily and deeply carved, and applied with a great deal of overstamping. This overstamping seems to arise from the use of the stamp paddle to shape the vessel in Lamar pottery. In the earlier types, the stamp was carefully applied as decoration after the vessel had been shaped. In south Georgia at least, in the rare instances when the design can be worked out, we find only simple combinations of bullseyes, scrolls, and crosses, plus the filfot cross. The diagnostic Lamar features, aside from the stamping, are a heavily grit tempered paste, distinct from the sand temper of earlier types, and the rims, which have notched or fluted lower edges to rim folds, notched added rim strips, or added rosettes.

In the northern part of the province, the developmental series begins with Napier Complicated Stamp (Jennings and Fairbanks, 1939). The vessel form used in this type is uncertain, the jar with round base, slight and rounded shoulders, and slightly flaring rim being most probable. Rims are either direct or have a narrow fold. Stamping, in fine but very distinctly impressed lands and grooves, is some-

what variable, but is readily distinguishable from other stamps. The variation runs from simple criss-crossed bundles of parallel lines, producing rather bewildering patterns, to relatively neat arrangements designed to produce sets of diamonds, each diamond filled with parallel horizontal lines (Figs. 51, 52). The best evidence for placement in time again comes from outside the area of dominance, from Kolomoki and the Swift Creek site. At Kolomoki, a variety with rather distinct diamonds (Sears, 1951a) is associated with a Swift Creek II variant and Weeden Island types, which would place this Napier variant just at the beginning of early Mississippi. Napier is also found in the later levels of the Swift Creek mound (Kelly, n.d.), which checks with its appearance at Kolomoki in deposits with a Swift Creek II variant.

On purely typological grounds, it seems possible that Napier Complicated Stamp may have developed from one of the early simple stamps, probably Mossy Oak Simple Stamp (Jennings and Fairbanks, 1939; Griffin and Sears, 1950). The earliest Napier variant in such a case would be that with the bundles of criss-cross lines. Certainly there is a clustering of this type of Napier in some sites, and that with the more formal diamonds at others, which implies a temporal variation. The formalization into the diamond patterns would then have taken place under influence from the southern curvilinear stamps, necessarily regular from their inception. Probably the earliest Napier dates in time close to the beginnings of early Swift Creek, and certainly the end period is in, or near, the beginnings of early Mississippi.

All over North Georgia, we find another complicated stamp readily derivable from Napier, Woodstock Complicated Stamp (Wauchope, 1948, 1950; Caldwell, personal communication; Department of Anthropology, University of Georgia collections). Although the stratigraphic data are weak, there can be little doubt that this type is the dominant pottery in north Georgia during the early Mississippi period. The major motif, almost the only one, is a simple diamond, constructed of two or three concentric lands and filled with parallel horizontal lines (Figs. 51, 52). The only difference between it and certain specimens classifiable as Napier Complicated Stamp is that one diamond is carved on a paddle instead of a chain of them. This development is illustrated on Fig. 52, as are others discussed below.

Woodstock, in turn, is ancestral to Etowah Complicated Stamp, a type in which diamonds are also the dominant motif (Wauchope, 1948, 1951; Sears, 1950, n.d.). The derivation is simply accomplished by reducing the number of horizontal lines to one, two, or three, and multiplying the concentric diamonds (See Fig. 52). It is probably also of importance that the Woodstock diamonds tend to be somewhat ovoid, a situation which also obtains in the earliest Etowah diamonds, the "ladder base" variety (Wauchope, 1950). The "ladder" in these earliest Etowah diamonds in all probability also indicates their relationship to the Woodstock diamonds, since in this early Etowah motif, the diamonds are still intact as in Woodstock. In the next Etowah development, they are split into "superimposed triangles" (Wauchope, 1950). In the earliest Etowah diamonds, the portion of the stamp outside the diamond motif is filled with horizontal lines. In later Etowah stamps, these are dropped, only the diamond itself being carved on the stamp. Another motif which occurs in both Woodstock and Etowah, in identical form this time, is the line block (Wauchope, 1948, 1950; Sears, 1950, n.d.), simple blocks of parallel lines, each block at right angles to the other. From this, toward the end of the Etowah period, the filfot cross develops (Wauchope, 1950).

I might point out here the parallelism in stamp design between these north Georgia angular stamps and the curvilinear stamps of the coastal plain. In both cases, we begin with relative complexity, and proceed to reduce both the number of major motifs and the number and complexity of fill elements as development proceeds. In both areas, the tendency is toward the use of one simple central element, and the complete lack of fill elements. This tendency is illustrated (Fig. 52) and is one trend of which we are definitely sure; it is one of the more important means of placing new stamped types, in either area, in their proper temporal position.

At this point, in north Georgia development, the Savannah-Wilbanks stamps intrude in our best stratigraphic site, CK 5 (Sears, 1950b, n.d.). However, other evidence indicates that the development toward Lamar continued. At

the Etowah site itself (personal inspection Andover collections) and at Peachtree (Setzler and Jennings, 1941), Nacoochee (Heye, Hodge and Pepper, 1918) and elsewhere, we find heavily overstamped pottery in which we may recognize both Etowah and Wilbanks motifs. In surface collections, we find some sites where the motifs are predominantly Etowah in derivation, others predominantly or entirely Savannah, or at least the curvilinear series.

This same situation continues into the Lamar period in north Georgia, a period during which the major type, Lamar Complicated Stamp is characterized as much by diversity as anything else. Certain sites in the area bear designs predominantly derived from the Etowah motif catalog, others just as clearly predominantly from the Savannah. In south Georgia however we find almost entirely curvilinear motifs in complicated stamping, angularity being confined to the central portions of filfot crosses.

It is relatively certain that Lamar in part represents the culture of the early historic and protohistoric Muskhogean speaking peoples. This apparent diversity of origins for the superficially uniform Lamar ceramic complex, even less uniform if we are to take the distribution of incised and check stamped wares into account, checks reasonably well with the known cultural diversity of Muskhogean peoples in the 17th and 18th centuries (Swanton, 1922), indicating that this diversity has roots well back into the past. We cannot stop with Muskhogean peoples in considering Lamar however, since it is certain that 18th century Cherokee pottery in north Georgia and adjacent areas (Lewis and Kneberg, 1941; Fairbanks, 1939; Department collections from Tugaloo; Caldwell, 1950) is also in large part classifiable as Lamar. Pee Dee Complicated Stamp, a protohistoric Siouan type of North Carolina (Coe, personal communication) could also be classified as Lamar. It might be well then, in the future, for us to think seriously before simply equating Lamar with 16th century Muskhogean culture, as has often been done. As a matter of procedure, it seems well nigh certain that these many recognizable variants of the basic Lamar tradition, variants with distinct space-time-culture significance, had best be isolated descriptively and terminologically as they are culturally. This will be a necessity if we are to sort out the ceramic coefficients of 16th and 17th century aboriginal culture in the South Appalachian province.

Complicated Stamping is then the chief mode of decoration for pottery in the South Appalachian province from about 500 A.D. until 1750 A.D., a period of over twelve hundred years. Throughout this period, we can readily distinguish two major modes of stamp design, a northern mode characterized by angularity and a southern by curvilinear designs. In both areas, the tendency through the total period is from complex to simple major design elements, to the simplification of the total stamp, correlated with a constantly decreasing use of fill elements, toward larger stamps which are more clearly and deeply carved, and toward symmetry of design in both the total stamps and in the major motifs. If we drop the Lamar stamping from consideration for a moment, the development in the south is from the elaborate and complex early Swift Creek stamps to the larger, heavier, and simpler designs of the Savannah-Wilbanks series. In the north, a parallel development leads us from the Napier designs, bewildering combinations of parallel line bundles, through to the simple diamonds and the simple form of the filfot cross in the Etowah series. Lamar motifs, as best we can tell, are basically those of either the Etowah or Wilbanks-Savannah series, confused through heavy overstamping.

The parallel developments in the northern and southern parts of the province as outlined above must be due in large part to influence from the one area on the other, the sort of influence from the south which may have produced the regularized Napier diamonds from the earlier erratic Napier on the one hand, and the movement of peoples indicated by the Savannah-Wilbanks intrusion into the Etowah valley on the other. Two very different sorts of influence are indicated, but both produced recognizable ceramic changes.

This is the picture of ceramic development in the South Appalachian province as it appears at present. The evidence is admittedly weak in certain spots, and typological seriation of the sort we have been forced to resort to in many cases is always shaky. However, it is believed that the major outline provided will be of some utility, and will serve as a basis for further work.

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Department of Anthropology
University of Georgia
Athens, Georgia
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THE GORDON SITE IN SOUTHERN MISSISSIPPI*

JOHN L. COTTER

THE GORDON SITE has been mentioned previously by Ford (1935, 1936) as site 61, the type site for the Coles Creek ceramic complex originally identified by a surface collection of 175 sherds. In his initial survey of the site, Ford placed it uppermost in the Coles Creek horizon, although the exact relationship of that horizon to other Southeastern cultures was at that time uncertain. Ford states:

> perhaps this name is a little unfortunate. Neither of the two original sites (the second was the Mazique Plantation Site which was not chosen for type site designation because of historical confusion with the White Apple Village of the Natchez) is quite typical of the many that have been located in southwestern Mississippi and east-central Louisiana. They differ in that they each yield a few sherds of the Tunica complex. Despite this fact there is no evidence that any of the Coles Creek sites retained their inhabitants until the time of contact with Europeans. The entire complex may be regarded as prehistoric (1936, p. 172).

This report will demonstrate that the Gordon site was, as Ford suspected, not a representative Coles Creek site, if the marker type is to be characterized by overhanging parallel lines and wedge-shaped punctations impressed at an angle with a squared tool below the rim of a straight-sided open pot. Actually only one sherd in the 20,333 Gordon site sherds sorted for the present study exactly fits this description, although 5.16 per cent of the decorated sherds qualify as Coles Creek on the basis of true overhanging parallel lines extending down from the rim.

The key to the difference between the present analysis and Ford's is to be found in the designation of Hardy Incised, which, on a percentage basis, corresponds closely with the proportion of Coles Creek Incised originally reported by Ford at the type site. Hardy In-

* Acknowledgement is made to the following persons and agencies for contributions toward the completion of this report: J. Fred Gordon of Fayette, Mississippi, who granted permission to excavate the site while it was yet in his ownership, prior to acquisition for the Natchez Trace Parkway, Marshall T. Newman and Henry W. Setzer of the U.S. National Museum, Washington, for human skeletal observations and animal bone identifications, respectively, Volney H. Jones, Museum of Anthropology, University of Michigan, for undertaking vegetal identifications, James A. Ford, James B. Griffin, William G. Haag, Philip Phillips and George I. Quimby and Alex D. Krieger for their consultations. This study, however, was completed before the writer had access to the Greenhouse (Ford 1951) and Medora (Quimby 1951) reports, thus permitting him the luxury of arriving at his conclusions with a fair degree of independence. Credit is due Jesse D. Jennings who initiated the program under which this study was made and to the staff of Natchez Trace Parkway, headed by Superintendent Malcolm Gardner, and to the Bureau of Public Roads. The burden of field and laboratory work was shared by archaeological aide John C. Stone, whose death of a heart attack at the age of 36 occurred in the final stage of the work. His faithful and able efforts will, it is hoped, be memorialized in this report.

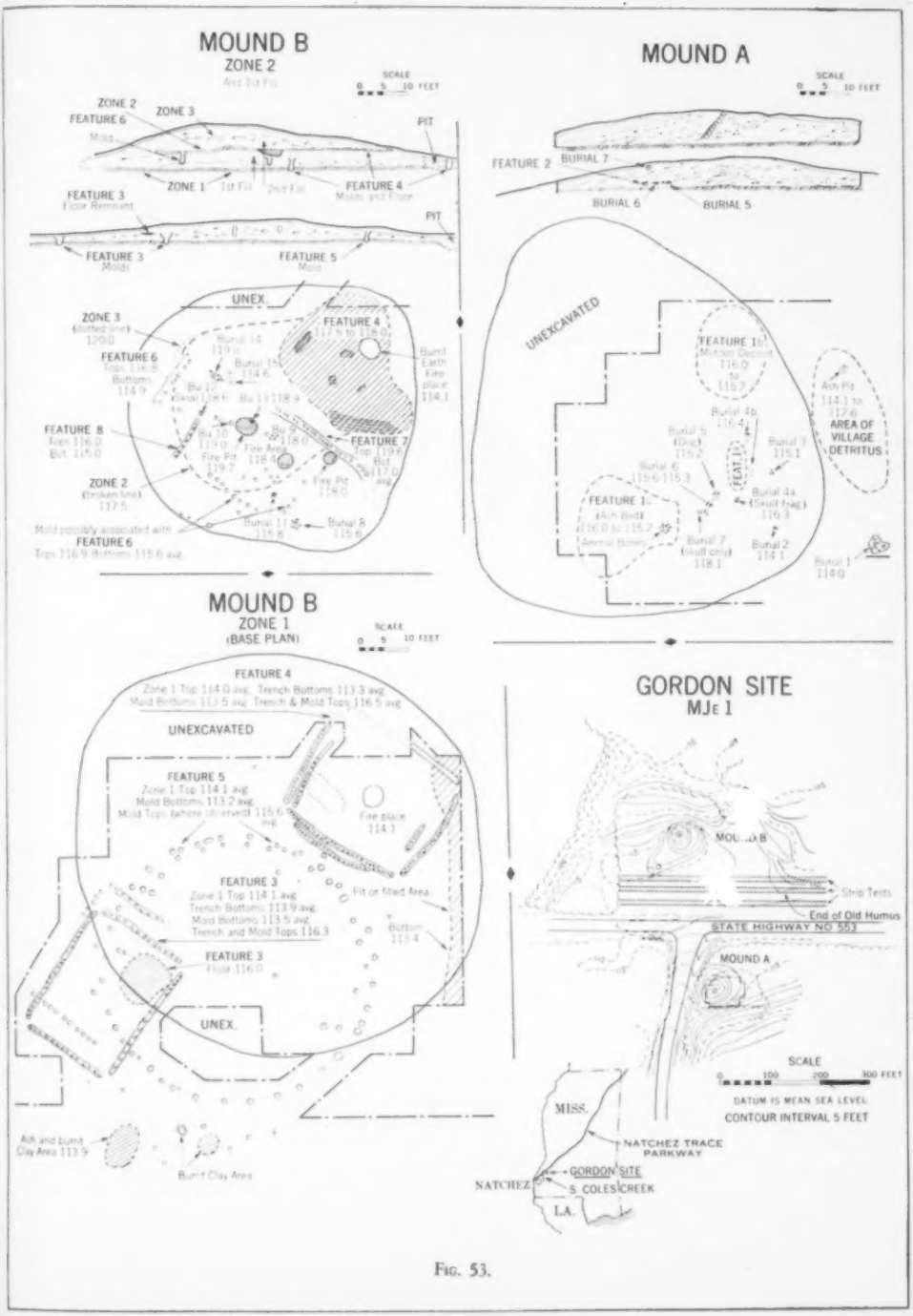
MOUND B
ZONE 2
SCALE
0 5 10 FEET
ZONE 2
ZONE 3
FEATURE 6
Mold
PIT
ZONE 1
1st Fill
2nd Fill
FEATURE 4
Molds and Floor
FEATURE 3
Floor Remnant
FEATURE 3
Molds
FEATURE 5
Mold
UNEX.
ZONE 3
(Mottled zone)
120.0
FEATURE 6
Tops 116.8
Bottoms
114.9
FEATURE 4
117.5 to 118.0
Burial 14
119.0
Burial 15
114.6
Burnt Earth
Fire place
114.1
Bu 12
(Skull) 116.6
Bu 13 118.9
FEATURE 8
Tops 116.0
Bot. 115.0
Bu 10
119.0
Fire Area
118.4
FEATURE 7
Top 119.6
Bot.
117.0
avg.
Fire Pit
119.7
Fire Pit
116.0
ZONE 2
(Broken line)
117.5
Burial 11
115.8
Burial 8
115.6
Mold possibly associated with
FEATURE 6
Tops 116.9 Bottoms 115.6 avg.
MOUND A
SCALE
0 5 10 FEET
FEATURE 2
BURIAL 7
BURIAL 6
BURIAL 5
UNEXCAVATED
FEATURE 1b
Mottled Deposit
116.0
to
115.2
Ash Pit
114.1 to
112.6
AREA OF
VILLAGE
DETRITUS
Burial 4b
116.4
Burial 5
(Disk)
115.2
Burial 3
115.1
FEAT. 1a
Burial 6
115.0 115.3
FEATURE 1c
(Ash Bed)
116.0 to 115.2
(Animal Bones)
Burial 4a
(Skull frag.)
116.3
Burial 7
(Skull only)
118.1
Burial 2
114.1
Burial 1
114.0
MOUND B
ZONE 1
(BASE PLAN)
SCALE
0 5 10 FEET
FEATURE 4
Zone 1 Top 114.0 avg. Trench Bottoms 113.3 avg.
Mold Bottoms 113.5 avg. Trench & Mold Tops 116.5 avg.
UNEXCAVATED
FEATURE 5
Zone 1 Top 114.1 avg.
Mold Bottoms 113.2 avg.
Mold Tops (where observed) 115.6 avg.
Fire place
114.1
FEATURE 3
Zone 1 Top 114.1 avg.
Trench Bottoms 113.9 avg.
Mold Bottoms 113.5 avg.
Trench and Mold Tops 116.3
Pit or filled Area
Bottom
113.4
FEATURE 3
Floor 116.0
UNEX.
Ash and burnt
Clay Area 113.9
Burnt Clay Area
GORDON SITE
MJe 1
MOUND B
Strip Tests
End of Old Humus
STATE HIGHWAY NO 553
MOUND A
SCALE
0 100 200 300 FEET
DATUM IS MEAN SEA LEVEL
CONTOUR INTERVAL 5 FEET
MISS.
NATCHEZ TRACE
PARKWAY
GORDON SITE
NATCHEZ
S. COLES CREEK
L.A.

FIG. 53.

FIG. 54. Pottery vessel reconstructions (all clay grit tempered). *1*, straight-sided, deep pot, plain, from village deposit beneath mound A; *2*, bowl, bottom of first fill, mound B; *3*, bowl, burial 1, village deposit east of mound A; *4*, small bowl or cup, village deposit beneath mound A; *5*, lipped dish, mound A fill; *6*, bowl, mound A fill; *7*, carinated bowl, village deposit beneath mound A; *8*, pot with constricted neck, village deposit beneath mound A; *9*, deep carinated bowl, mound A fill; *10*, *11*, carinated bowls, mound A fill; *12*, Hardy Incised pot, mound B, first fill; *13*, Hardy Incised pot, mound B, first fill beneath feature 4; *14*, Plaquemine Brushed pot, plow zone of mound B; *15*, curvilinear incised-punctated (cf. Crockett Curvilinear), from fill above feature 3; *16*, Hardy Incised pot, mound A fill; *17*, Hardy Incised pot, village deposit beneath mound A; *18*, Hardy Incised pot, from top of old humus in village area south of mound B; *19*, Curvilinear incised-punctated (cf. Crockett Curvilinear), south of mound B; *20*, curvilinear incised-punctated (cf. Crockett Curvilinear), mound A fill; *21*, Manchac Incised, village deposit beneath mound A; *22*, Plaquemine Brushed rectangular-based pot, village deposit beneath mound A; *23*, Beldeau Incised pot, mound A fill; *24*, Hardy Incised large carinated bowl, from fragments scattered throughout mound A fill.

cised differs from Coles Creek Incised mainly in that the lines of Hardy are incised with a pointed tool and do not overhang, and any punctations below the parallel lines are usually made with a pointed tool instead of a squared point held at an angle. The paste of each type is virtually the same. At the Gordon site, the two types were demonstrably contemporaneous, with the implication that the "classic" Coles Creek type was fading out, leaving Hardy the dominant type in the early period of the site occupation. Ultimately, Hardy diminishes as the dominant type and is supplanted by Plaquemine Brushed. The full data in this report may suggest that the Coles Creek period blends into Plaquemine-Natchez over an interval of no great duration, at least at the Gordon site. This accounts for a few Mulberry Creek Cordmarked, Marksville Stamped and Troyville Stamped sherds which mingle with the rest.

This report seeks (a) to present pottery types, with relative percentages, at the Coles Creek type site, (b) to indicate the character of the mounds at this site and types of structure associated with the mounds and precedent village, and (c) to attempt to correlate, if possible, the site features and indicated traits with pottery types or complexes. The over-all problem, when this is accomplished, is to identify the traits and time horizon here represented in the development of Temple Mound culture in the lower Mississippi Valley. It will then be possible to make comparisons with culturally related sites in the southern United States in an effort to cast light upon relationships and derivation of these traits, especially with reference to Middle American or Antillean influence in the lower Mississippi Valley.

The two low, rounded mound remnants and the underlying and surrounding village deposit which comprise the site are located at the north end of Section 3-W of the Natchez Trace Parkway at the intersection of the Parkway motor road and Mississippi State Highway 553. The Gordon site, designated MJe-1 in the Archaeological Survey of Natchez Trace Parkway, is in Jefferson County, Range 1-W, Township 9 north, Section 31, 7 miles west of Fayette, Mississippi, and occupies the edge of a low terrace above the east bank of the South Fork of Coles Creek.

Whether the two mounds were originally truncated cones or truncated pyramids is not indicated by their present aspect. In 1950 the dimensions were reduced to an average diameter of 80 feet for mound A and 70 feet for mound B. The height of each mound was 6 feet. Although human burials or skeletal fragments were present in both mounds, and mound A was built on a midden area which contained scattered human bones, neither mound covered a central tomb structure, floor, nor prepared basin. Evidence of rectangular structures lay within the fill of mound B; however, no structure was exactly centered within the fill so as to represent unmistakably a primary temple in the first stage of mound use. It is possible that the location of the original structures did not coincide with the present placement of mound fill. In other words, fill may have been placed above obliterated floors and extended north and west so that later buildings did not overlie the older ones. These observations should be borne in mind during the following site descriptions.

The village area at the Gordon site is now limited to about 4 acres between mounds A and B and an additional half acre east of mound A. Erosion may have accounted for considerable reduction of the village area now observable. This is especially probable when the ravages of 110 years of cotton cropping are considered. The entire east-west length of the village remnant was tested with hand tools after a road patrol had removed the plow zone from three 12-foot strips (Fig. 53). By this procedure it was determined that only a portion of the dark humus which originally underlay the village was preserved, and except for a few shallow pits and unrelated post molds, no features of archaeological importance remained.

OBSERVATIONS

As the fill of mounds A and B was removed it was screened and all recognizable features and burials were recorded. Data so obtained may be summarized as follows:

Mound A Fill. This fill was composed of well-defined basket loads from base to extant surface. First deposits were laid down in the northern sector resulting in inclusive, steep slopes with cleavage lines. Since no soil had formed on these slopes, continuous building is indicated. No post molds or other indications of structures were observed. Associations: The fill lay above features 1 and 2, detritus areas

composed of scattered ash, charcoal, animal and human bones, all of which had been deposited upon the original humus. Within the fill the following stone artifacts occurred: 2 Alba Barbed points, one with burial 5 (Fig. 59, 3), another in the bottom of the fill (Fig. 59, 7), 1 Hayes Barbed from the edge of the fill at the east foot of the mound (Fig. 59, 8), 1 "fish tail" arrowhead from the bottom of the fill (Fig. 59, 9), 2 "Gary Stemmed" type points (Fig. 59, 12 and 17), 1 stemmed point above burial 4 (Fig. 59, 20), 1 key drill (Fig. 59, 22), 1 discoidal, biconcave "chunky stone," 1 ground hematite fragment. Ceramic artifacts: 1 red painted clay figurine head, clay grit tempered (Fig. 56, 24), 581 decorated vessel sherds, of which Hardy Incised is a dominant 40.2 per cent; Manchac Incised, Plaquemine Brushed, Coles Creek Incised and Rhinehart Punctated secondary with a range of 8.8 per cent to 6.9 per cent (Fig. 55).

Mound B Fill. Here the basket loading is well-defined above the occupational level associated with feature 4 (zone 2) but poorly-defined below. The first fill is presumed to have been a low embankment overlying the old humus (zone 1). It is through this embankment that post molds of one circular and two rectangular houses protrude. Above the true mound structure of the secondary fill, with its distinct loading, zone 3 appears as a faint remnant of the latest preserved occupational stage. Associations may be summarized as first fill: features 3, 4, 5 and 8, all house structures; burials 8, 11, 12 and 15. First fill and zone 2: feature 6. Second fill and zone 3: feature 7. Second Fill: burials 9, 10, 13 and 14. Additional data follows. Ceramic associations are shown in Figure 55.

Mound A Features. Feature 1: Three related areas of concentrated kitchen debris beneath the fill of mound A, on the old humus zone, constituted the first feature (Fig. 53). Associated were two clusters of human bone, designated "burials" 2 and 3; 2 "fish tail" arrowheads (Fig. 59, 1, 10); 1 probable knife, 1 flake side scraper, 1 grinding stone (Fig. 59, 25). Ceramic evidence showed Hardy Incised in its strongest proportion at the site and Plaquemine Brushed in its weakest. Coles Creek Incised and Manchac Incised were relatively strong. Pottery types for both features 1 and 2 are summarized in Figure 55 under the heading "Village Zone Beneath Mound A." Animal bones were concentrated in feature 1. Of the species represented, over 90 per cent were deer (Odocoileus virginianus) and the remainder bear (Euarctos americanus) and gar (Lepisosteus sp), the last indicated by scales.

Feature 2: A limited detritus deposit lay on the eastern foot of an inclusive heap of fill representative of the first laid down in the mound. Associations within this detritus were burial 4 with 2 Alba Barbed arrowheads (Fig. 59, 4, 5) and burial 6.

Mound B Features. Feature 3: This rectangular structure, 20 by 27 feet, indicated by post molds in trenches, open at the corners, with evidence of fire destruction on a floor remnant, lay partially under the secondary fill of mound B. The molds intruded into an inclusive dump deposit which formed an initial fill extending beyond the present limits of the mound remnant. The feature 3 rectangle was partially superimposed on the western sector of a circular structure, feature 5, and subsequent to it. A fragmentary pattern of a rectangular structure adjacent to the north corner of feature 3 was probably older than 3 but later than 5. Pottery associations with feature 3 floor remnant were 2 plain clay grit sherds, 3 Hardy Incised, 2 Manchac Incised, 1 Coles Creek Incised, 1 Mulberry Creek Cordmarked.

Feature 4: A rectangular structure 23 by 27 feet, identified by a well-defined mass of charred grass thatch on a burned floor level and charcoal-filled post molds in trenches, lay beneath the northeast sector of the mound on an embankment 2.5 feet above the original humus zone. Open corners, as in the feature 3 structure, are indicated. Two partial trench molds within, and one outside the main pattern, may belong to the same structure as a double wall or they may belong to a separate structure. The eastern extremity of the molds of feature 4 lay in the fill of a borrow area from which the original low embankment constituting the first fill was made. A circular central fire pit extended from the floor level to the top of the old humus zone. In comparing the pottery associations of the feature 4 house in Figure 55, it should be noted that the first fill and its pottery content must antedate the intrusive structures set upon it. On the other hand, pottery fragments from the floor debris must approximate contemporaneity. Actually,

the correspondence in pottery types is close, with both first fill and floor dominated by Plaquemine Brushed and Hardy Incised relatively weak. Fatherland Incised is as strong in the first fill beneath feature 4 as it was on the mound A village surface, indicating that in this area the first fill was a late extension partially over the original borrow zone for the old embankment, and is much later than the earlier fill on which feature 5 was placed.

Feature 5: This structure was marked by a 53 foot circle of 54 single posts set in dug holes within the low embankment forming the first fill underlying the south half of mound B. No trace of floor remained, nor could a door be defined except possibly in the northwest quadrant. Child burials 8 and 11 were located inside the circular house pattern of feature 5 and within the first fill through which post holes penetrated into the old humus. Pottery types noted for sherds within the circle and the first fill represented the largest proportion of older types at the site and place the original embankment at this location in the late Coles Creek-early Plaquemine range.

Features 6, 7 and 8 each represent indefinite lines of single post molds, the latter two series set in trenches. All three structures were presumably rectangular. Feature 6 molds extended into the first fill but not into the old humus. Zone 2 possibly represented a trace of floor area for the feature 6 structure on which a fire pit would have been roughly centered (Fig. 53). Within this possible rectangle (or within the feature 7 structure) were burials 9, 10, 12, 13 and 14, all in the second fill and above zone 2. It may be significant that the pottery of the first fill, zone 2 and second fill in the vicinity of feature 6 showed 26 per cent Plaquemine Brushed, 24 per cent Hardy Incised and 2 per cent Coles Creek Incised. The feature 7 structure molds lay immediately below zone 3, a possible floor, in second fill. Pottery associated with zone 3 was exclusively Plaquemine Brushed and Manchac Incised. The single line of post molds in a trench representing feature 8 lie beneath zone 2 but do not extend through the first fill to the old humus.

The following data summarizes field observations of the writer and laboratory studies of Marshall T. Newman, U. S. National Museum, to whom all human skeletal material was submitted after preliminary cleaning and preparation.

Village Area Burial. Burial 1 was a lightly-flexed middle-aged adult, probably male, interred on the left side, head west, in an irregularly oval pit located 12 feet east of the

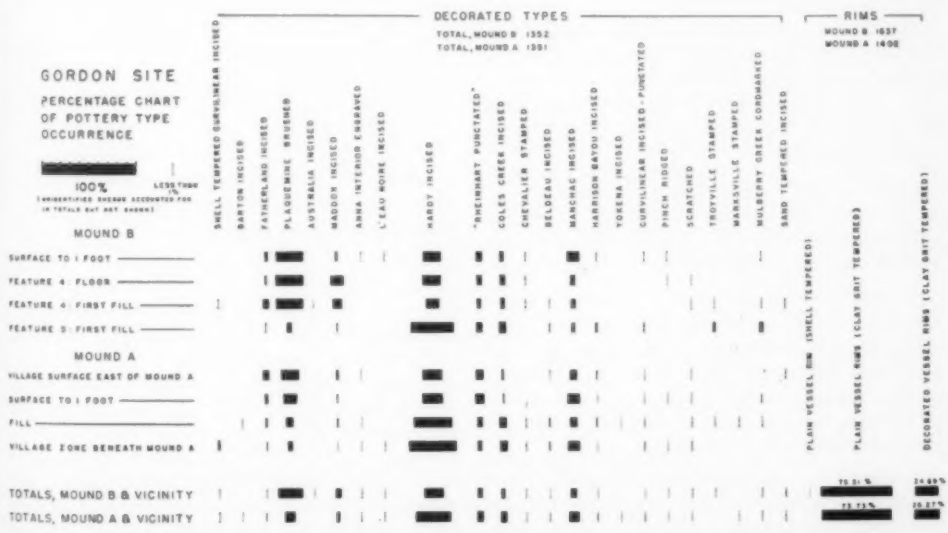

FIG. 55.

present limit of fill drift of mound A, 1.3 feet below the surface. The preservation was poor. Associations were 1 effigy fish bowl, incised and polished, 1 small Manchac Incised cup, 1 small Manchac Incised pot, 1 small plain smoothed bowl of clay-grit paste, 1 plain carinated bowl, polished, clay-grit paste.

Mound A Burials. For the sake of consistency in designating human skeletal finds in mound A, units of associated human bones were called burials, even though they may represent only portions of individuals distributed in the detritus beneath the mound without evident pattern. The bones were not burned, cut or purposely broken, so that neither cremation nor cannibalism was indicated. Only numbers 5, a dog, and 6, a human, were complete skeletons, but these, like the others, were not associated with pits or other evidence of a made grave. Field observation suggested that skeletal remains in the original village deposit were disturbed and scattered as mound fill was gathered and deposited. The dog skeleton and the skull of burial 7 were within the fill.

Burial 2: Loosely-clustered human teeth and upper mandible fragments, all adult, lay in village detritus beneath the fill and were possibly associated with burial 3 cranial fragments 10 feet to the north. No artifacts were associated.

Burial 3: Two adult skull caps, fragmentary, and scattered teeth and phalanges lay in the contact zone at the bottom of the fill. One of the skull portions showed occipital flattening. Associated was one hematite fragment with traces of grinding.

Burial 4: Massive cranial and thoracic fragments of a middle-aged male lay in detritus at the bottom of the fill, associated with 2 Alba Barbed type arrowheads.

Burial 5: A dog skeleton in anatomical order lay head to the north in mound fill .5 foot above the bottom contact. Loading showed the body had been deposited while the building of the mound was in progress. Associated was 1 Alba Barbed type arrowhead. The dog was a mature specimen of small to medium size. All available measurements fall within the ranges of the small dogs from Kentucky and Alabama shell heaps. Forelimb measurements are quite close to the means of the Kentucky dogs and the hind limb size is near that of the means of the Alabama dogs. However, some measurements are within the range of specimens from sites classified in the Mississippi pattern, and a dog from the Coles Creek period Greenhouse Site, near Marksville, La., is very close in comparable measurements. Haag, who examined the skeleton, concludes: "The almost inescapable explanation is that by Middle Mississippi times dogs were quite differentiated and several varieties existed, one or more of which were like earlier small dogs. This condition closely parallels that of human remains where earlier forms may be rather uniformly long-headed, but long heads do persist into more recent times. Hence, this Gordon dog may be a survival type, but a type not unique in its time."

Burial 6: The semi-articulated skeleton of an adolescent female, skull and jaw shattered, with pronounced occipital deformation, lay loosely extended on the back, head to the south, with considerable displacement of the arm, leg and rib bones. This probable bone burial was deposited on a local accumulation of brown earth (feature 2) covering the old village surface to a depth of half a foot or more. Fill lay directly above. Fragments of an infant skull lay above the pelvic area. The lower jaw of a second adult was located at the feet. No artifacts were associated with the bones.

Burial 7: This single adult skull, probably male, without lower jaw, was located 1.5 feet below the mound surface in fill and 2.5 feet above burial 6. No artifacts were associated with the skull.

Mound B Burials. All burials of mound B were located either in an initial deposit of poorly-defined loading (termed first fill) which extended south and west beyond the present mound area into the village, or in the second fill. The nature of the burials in the first fill, which were all child or infant, strongly indicates ceremonial significance.

Burial 8: A cluster of fragmentary infant skulls, numbering from 4 to 6 individuals and representing ages from a few months to 3 years lay in the first fill within the pattern of feature 5 circular structure and below the assumed floor level. No pit or artifact associations were noted. One skull showed bifrontal flattening.

Burial 9: A poorly preserved adult (?), probably originally entire, had probably been a flesh or secondary burial in the second fill, possibly within the wall enclosure of rectangular feature 7 structure. Only associations were small chert flakes; no pit was visible.

Burial 10: This young adult lay extended on the back, head east, and was probably a flesh burial, since the bones, although poorly preserved, lay in evident anatomical order. Position of the bones was in the second fill below a burned floor level. Chert flakes, small and very sharp, were associated. Burials 9, 12 and 13 lay in close proximity, possibly representing bundle burials in the same level. No pit was observed.

Burial 11: The bones of an infant over 1½ years old lay in a compact mass, poorly preserved, in the first fill and within the feature 6 structure rectangle. Associated were 1 "fish tail" arrowpoint and several small, sharp chert flakes. No pit was present.

Burial 12: Scraps of a middle-aged adult skull, incomplete and poorly preserved, lay in the second fill associated with pieces of deer bones, chert flakes (uniformly small and sharp), 1 Fatherland Incised and 6 Hardy Incised sherds. No pit.

Burial 13: The fragmentary skull of a young adolescent, probably female, and a mass of broken, scattered bones suggested a possible bundle burial. Whether or not a made grave enclosed the bones in the second fill is indefinite. The position was near burials 9 and 12, within the possible rectangle of feature 7 structure floor.

Burial 14: Another probable bone burial, this incomplete, semi-articulated young male adult lay in an indefinite grave within the second fill. Associated directly, in the thoracic area, was a greenstone celt of small size and well-polished. Five feet south of the head and in the same deposit was a small plain clay-grit jar.

Burial 15: Two individual children 4 to 5 years old, indicated by 1 skull cap showing bifronto-occipital deformation and 1 fragmentary skeleton, the frontal bone of which shows bifrontal flattening, lay together at the bottom of the first fill. Associated were deer bone scraps but no grave outline.

TRAIT LIST

The following trait list characterizes the Gordon site as a late prehistoric village with its associated mounds. These mounds were built over successive structures the patterns of which changed from round to rectangular in a cultural continuum, while pottery type emphasis changed from Hardy Incised and a remnant of Coles Creek Incised to Plaquemine Brushed.

The People: Centralids, Practicing Occipital and possibly some frontal deformation

Food Gathering:

- Agricultural (inferred only)
- Hunting and Gathering
  - Deer. Primary game source
  - Bear
  - Rabbit
  - Squirrel
  - Turkey
  - Wood Duck
  - Shellfish. Fresh water clams (limited)
  - Fish. Principally gar
  - Nuts, berries, roots, acorns, fruits (inferred)

Community Plan:

- Village Location
  - Riverine: on low bluff above stream bottoms
  - Village surrounding and underlying mounds
- Structures
  - Circular, single, unpaired post molds, large and deep, 54 foot pattern diameter, on original low embankment later covered by mound B
  - Rectangular 20x17 feet, small post holes in shallow trench, molds extended below trench bottom, within mound B fill, floors indicated by char zones
  - Rectangular double wall structure in lower portion of mound B fill, posts set in narrow trenches, extending below trench bottom
  - Rectangular structure of single post, not in trenches
  - No entry observed in dwellings
  - Shallow fire basins in center of rectangular structures
  - Refuse pits in village zone

Temple Mound group in village

- Mounds
  - Truncated pyramidal, possibly originally truncated conical
  - Continued construction after burning of building Structures inclusive
  - Rectangular structures on mound platform, walls of upright posts set in trenches
- Burials in village (one only, of late horizon)
  - Irregular oval pit
  - Flexed burial with whole pots

Burials associated with mound
- Burial of disarticulated skeleton in first fill or on old village surface below mound
- Scattered adult human bones in village detritus at base of mound
- Child skull cluster in first fill of mound
- Extended flesh burial within mound fill

Ceremonial Activity

Mound complex
- Scattered human bones, base of mound
- Dismembered and broken skeletal deposit roughly in anatomical order at base of mound
- Extended flesh burial with greenstone celt and pair of small arrowheads in mound fill
- Clusters of child skulls in first fill of mound

Industrial and Artistic Activity

Flaked stone

Points
- Tapered "fish tail" base (Natchezan type)
- Tapered "fir tree," small, pressure flaked (Alba barbed type)
- Leaf-shaped with tapered base, pressure flaked
- Side-notched, roughly flaked by percussion

Key drill

Knives
- Ovate forms, percussion chipped

Flakes utilized as knives, but unretouched

Ground Stone

Miniature greenstone celt
- Discoidals, biconcave, small, ground sandstone
- Smooth pebbles

Shell
- Indications of cut shell ornaments (clam shell)

Fiber Complex: Unknown, but basketry and simple weaving indicated

Pottery Complex:

74.52 per cent undecorated, clay grit tempered, smoothed or polished ware, mostly wide-mouthed pots, some bowls, including carinated forms

Decorated: Mostly incised or incised and punctated, minor proportions of stamped, cordmarked, engraved or scratched

Plain	Decorated
Major types:	
(above 3 per cent)	
Clay-grit, polished	Hardy Incised
	Plaquemine Brushed
	Manchac Incised
Clay-grit, smoothed	Rhinehart Punctated
	Coles Creek Incised
	Maddox Incised
	Fatherland Incised
Minor types:	
Shell-tempered, smoothed	Beldeau Incised
	Harrison Bayou Incised
	Curvilinear incised-punctated
Sand-tempered, smoothed	Chevalier Stamped
	Troyville Stamped
	Mulberry Creek Cordmarked
	Anna Interior Engraved
	Shell-tempered curvilinear incised
	Sand-tempered incised
	Yokena Incised
	L'Eau Noire Incised
	Australia Incised
	Barton Incised
	Marksville Zone Stamped
Clay Figurine	Human, red-painted figurine
Clay disc plugs, solid, undecorated	

CERAMIC SUMMARY

One of the most objective (if the most intricate) methods for analyzing and summarizing pottery surface treatment and design ever offered was devised by Ford (1936, Fig. 2). If carefully used, this summary of 103 site collections, which relies upon 93 code numbers, each of which distinguishes a design or surface treatment element, gives an automatic classification which obviates the vagaries of type names and descriptions. It is not too difficult to identify in his tabulation of 175 decorated sherds at the Coles Creek type site (Fig. 2, No. 61) the main pottery types as listed in the present report. Ford found the dominant motif to be parallel lines arranged horizontally below the rim with a row of punctations, usually triangular, below these lines. This motif was found on 36 per cent of the sherds. However, the parallel incised lines were described as "overhanging," that is, made with a flat, pointed instrument held at an angle so that the tops of the lines are deeply incised, while the bottoms rise flush with the surface of the vessel wall.

If we consider the totals for 2733 decorated sherds representing the present Gordon site collection in Figure 55, we find 29.27 per cent were Hardy Incised, that is, vessel sherds with a motif of parallel lines arranged horizontally below the rim, but incised with a more or less pointed instrument. Only 5.16 per cent of the total sherds had truly overhanging lines characterizing them as Coles Creek Incised by definition. Together, Hardy Incised and

Coles Creek Incised sherds total 34.43 per cent, equating closely with Ford's 36 per cent quoted above. When he examined the Gordon site parallel-line incised material in 1951, Ford advised its definition as Hardy Incised. (The writer had previously classified most of it as Coles Creek Incised.) Apparently, the crux of the matter lies in the pointed or blunted condition of the potter's incising tool and whether or not she held it at a sufficient angle to produce an overhanging line. At the Gordon site many vessels were incised with horizontal lines below the rim that grade from barely perceptible overhang to an obvious angling of the flat-pointed tool. Yet the lines may be fine enough or widely enough spaced so that they do not actually overhang.

The predominance of Hardy and Coles Creek Incised vessels together in the earlier horizon at the Gordon site is demonstrated in this report. Both carry on also to the later occupation in diminished importance. The fact is that here we have a village where potters at first made about half of their decorated pots with parallel lines incised below the rim, sometimes bounded at the bottom of the series with a row of punctates, sometimes not. Whether the potter used a flat-pointed blunt tool or a sharp tool for incising and punctating was evidently a matter of personal preference or ability. If the tool were squared and flat pointed, the lines were incised at a slant so as to be overhanging, and the punctations, made by the same tool were accordingly triangular and impressed likewise at a slant. Many of the sherds classified as Hardy Incised in the present report are incised with the tool held somewhat at a slant, although the lines do not overhang.

If, therefore, as seems probable, the classic Coles Creek Incised with overhanging lines and slanted triangular punctations represented a full development of this motif in early Temple Mound times, it was probably always accompanied by examples of round point incising using essentially the same motif, and it was this simple incising that may have become dominant after the more exacting technique diminished in favor.

At the Gordon site there is a clear inference that Coles Creek Incised, accompanied by remnants of Troyville Stamped and Mulberry Creek Cordmarked, was becoming decadent, or metamorphosed into Hardy Incised at a time when the last circular ceremonial structures were being built. A following period of rectangular ceremonial structures was characterized by a predominance of Plaquemine Brushed, with Hardy Incised still strong, Coles Creek Incised negligible, and Maddox Incised becoming stronger. Fatherland Incised is present in minor proportions throughout the site, but is strongest in late features and late fill. Shell-tempered incised, although very minor

FIG. 56. Unidentified types and miscellaneous pottery objects. *1*, unidentified exterior incised, from pit beneath feature 4, mound B; *2*, same, mound A fill; *3*, same, plow zone, mound B; *4*, *5*, *6*, same, mound A fill; *7*, same, feature 4, first fill, mound B; *8*, same, village deposit beneath mound A; *9*, same, (possibly Ranch Incised), feature 4, second fill, mound B; *10*, same, feature 4 floor, mound B; *11*, same, with burial 5, mound A; *12*, same, (possibly Ranch Incised), surface of mound B; *13*, curvilinear incised, shell-tempered, feature 4, first fill, mound B; *14*, Pinch Ridged, surface of mound B; *15*, Pinch Ridged, surface of mound A; *16*, unidentified interior incised, with burial 12, mound B; *17*, unidentified interior incised, shell-tempered, feature 4, first fill, mound B; *18*, unidentified scratched, mound B plow zone; *22*, handle fragment, village deposit beneath mound A; *23*, perforated disc, mound B, first fill; *24*, damaged head of figurine, mound A fill; *25*, tab handle, feature 4, first fill, mound B; *26*, pottery "ear plug" or clay disc, mound A fill.

quantitatively, is associated both in an early and late stage of the site, but is more numerous in the late. The exclusive association of all the plain shell-tempered pottery at the site with the rectangular feature 4, a later structure of mound B, is especially noteworthy.

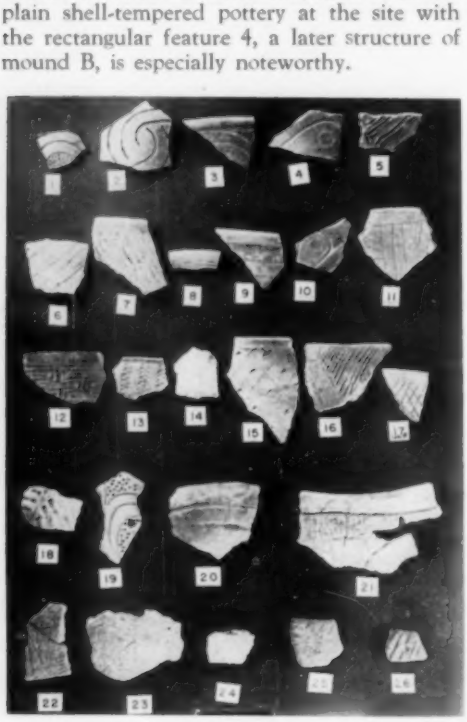

FIG. 57. Pottery types. *1*, shell-tempered curvilinear incised from village deposit beneath mound A; *2*, Fatherland Incised from same deposit; *3*, Fatherland Incised from feature 4 floor, mound B; *4*, Fatherland Incised, surface of mound B; *5*, Barton Incised, fill of mound A; *6*, Plaquemine Brushed, village deposit beneath mound A; *7*, Plaquemine Brushed, feature 4 floor, mound B; *8*, Australia Incised, feature 4, first fill, mound B; *9*, Maddox Incised, feature 4, first fill, mound B; *10*, Maddox Incised, feature 4 floor, mound B; *11*, Anna Interior Engraved, mound A fill; *12*, L' Eau Noire, surface of mound B; *13*, Chevalier Stamped, mound A fill; *14*, Chevalier Stamped, feature 4, second fill, mound B; *15*, Beldeau Incised, mound A fill; *16*, Manchac Incised, feature 4, first fill, mound B; *17*, Harrison Bayou Incised, village deposit east of mound A; *18*, Yokena Incised, mound A fill; *19*, Curvilinear incised punctated, feature 5, first fill, mound B; *20*, Troyville Stamped, feature 5, first fill, mound B; *21*, Marksville Stamped, mound A fill; *22*, Mulberry Creek Cordmarked, feature 5, first fill, mound B; *23*, Mulberry Creek Cordmarked, mound B, first fill; *24*, Mulberry Creek Cordmarked, mound B, second fill; *25*, *26*, unidentified incised, sand tempered, feature 4, first fill, mound B.

The over-all summary of pottery types is given in Figure 55, from which the reader may draw further conclusions. The significance of plain vessels is contained in the following summary of basic sherd data which indicates that 80 per cent of these were straight-sided deep pots. A comparison of decorated rim sherds which are clearly representative of the whole vessels with equally representative plain rim sherds gives reliable proof that 75 per cent of all vessels were plain, either smoothed or polished.

CORRELATIONS AND CONCLUSIONS

Here we have presented the material evidence recovered by excavating completely the Coles Creek type site. The nature of mound structure, features, burials, lithic and ceramic artifacts has been described and illustrated,

FIG. 58. Pottery Types. *1*, classic Coles Creek Incised from mound B surface; *2-6*, Coles Creek Incised from mound A fill; *7-10*, Coles Creek Incised from feature 4 floor; *11-13*, Coles Creek Incised from feature 5, first fill; *14-18*, Hardy Incised from feature 5, first fill; *19-23*, Hardy Incised from village deposit beneath mound A; *24-27*, Rhinehart Punctated from village deposit beneath mound A; *28-29*, Rhinehart Punctated from feature 4 floor, mound B.

and to some extent, analyzed. It remains to resolve from all these traits some picture of the life of the people who alone give meaning to this study. The question posed here is whether the transition from Coles Creek to Plaquemine with Natchezan criteria already present is a valid cultural change from one period to another, i.e., Temple Mound I to II, or simply the introduction of a new ceremonial structure type plus a change in pottery style and taste within a stable and basically unaltered economy.

The framework upon which the cultural mosaic of the Gordon site may be assembled is the accompanying trait list. By viewing this list in developmental perspective, we see the village initiated by people who erected a single circular structure of upright posts set in individual post holes upon a low embankment accumulated upon the original humus. The purpose of the circular structure, in the absence of any concrete evidence, is obscure, but it is significant that the village area, although tested extensively, yielded no evidence of any similar structure. Had this structure been an ordinary communal or family dwelling, there should have been others like it, with a circular post hole pattern penetrating to undisturbed earth through the humus. By inference, then, the circular structure was a special edifice, either the habitation of a personage or a temple. The nature of dwellings presumed to have been erected on the village site was not revealed by the present excavations, and no house patterns were preserved in the humus level beyond the two mounds.

Initially, the villagers were sedentary horticulturists dependent upon the rich bottom lands in the valley of Coles Creek for the bulk of their produce which was probably derived from gardening after slashing and burning had cleared the land. Although they fished, midden refuse indicates the creek was not a source of food molluscs. Since no evidence of corn was recovered from any part of the excavation, even from pits in the village proper, it cannot be stated positively that this staple was known here. (In fact, it is difficult to find concrete evidence in the entire Mississippi-Louisiana area that corn was raised extensively before the full development of the Mississippian or Temple Mound culture, which must, therefore, have antedated considerably the arrival of De Soto, who found corn raised intensively in this area.)

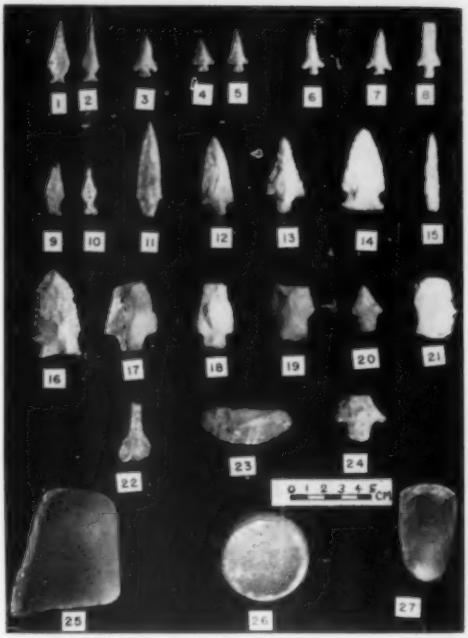

FIG. 59. Lithic artifacts. *1*, "Fish tail" arrowhead associated with Plaquemine horizon, found in village deposit beneath mound A; *2*, same type as 1, found with burial 11, mound B, first fill. *3-7*, "fir tree" type (Alba Barbed). *8*, elongated "fir tree" type (Hayes Barbed, elongated version of Alba Barbed) from the surface-plow zone of mound A; *9*, "fish tail" arrowhead from mound A fill; *10*, small "fish tail" arrowhead from village deposit beneath mound A; *11*, stemmed point or knife from bottom of first fill, mound B; *12*, stemmed point from mound A fill; *13*, stemmed point from mound B first fill; *14*, laterally notched point from plow zone of mound B; *15*, awl or point with poorly-defined base from plow zone of mound B; *16*, serrated spear point from surface of village area east of mound B; *17*, stemmed point fragment from fill of mound A; *18*, stemmed point fragment from second fill of mound B; *19*, stemmed point fragment from plow zone of mound A; *20*, small stemmed point from vicinity of burial 4, in fill of mound A; *21*, utilized flake from surface, south of mound B; *22*, key drill from fill of mound A; *23*, knife with retouched, curved edge, from village deposit beneath mound A; *24*, stemmed point fragment from first fill of mound B; *25*, small sandstone fragment with grinding surface, from village deposit, bottom of mound A; *26*, chunky stone from first fill of mound B (area of feature 5 intrusion); *27*, small, polished greenstone celt associated directly with burial 14, mound B, zone 2.

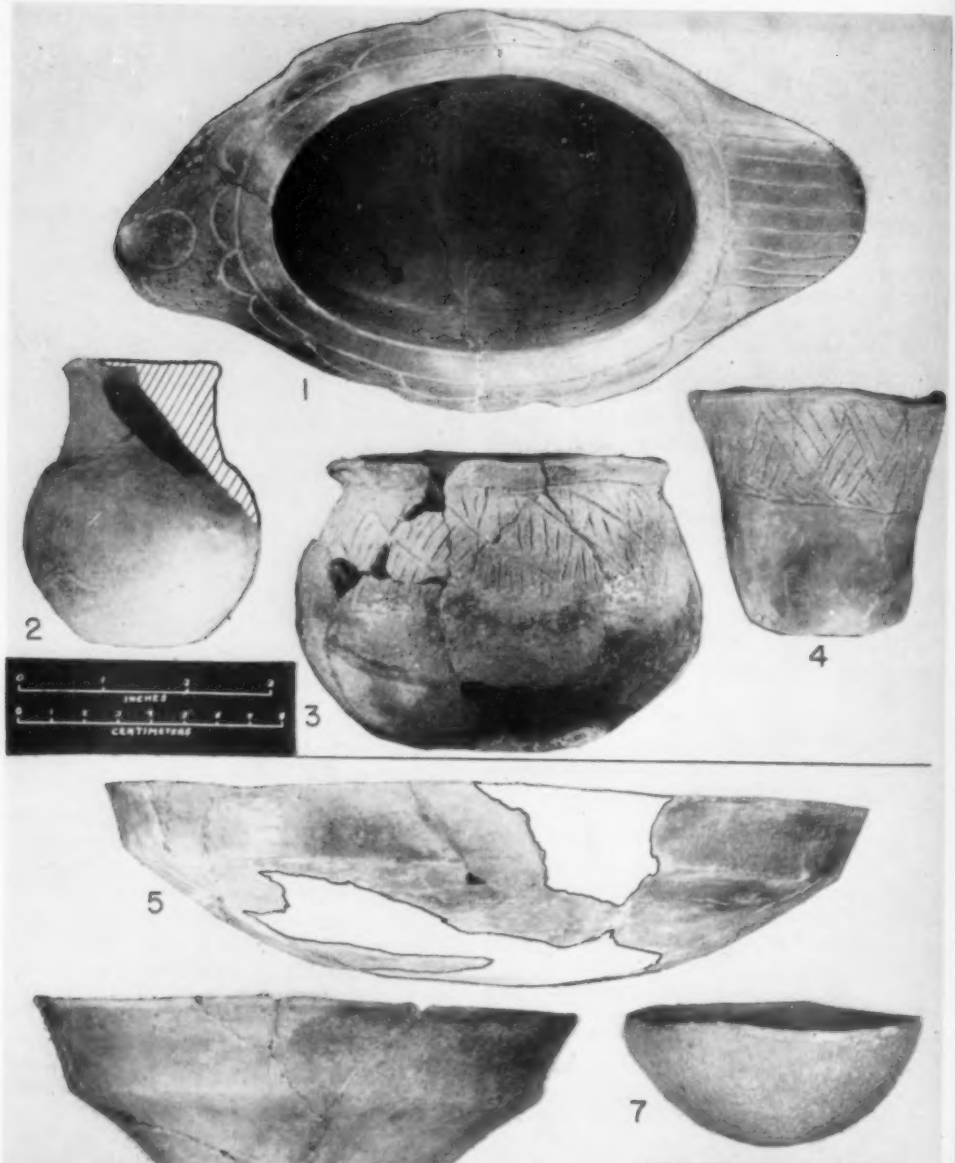

FIG. 60. 1, top view of fish effigy pot found in two halves with burial 1, located superficially in the village deposit east of mound A; 2, small plain clay grit-tempered jar found in the vicinity of burial 14, mound B; 3, small Manchac Incised pot with burial 1, village east of mound A. 4, Manchac Incised cup with burial 1; 5, carinated plain bowl from fill over feature 3, mound B; 6, carinated plain bowl with burial 1, village east of mound A; 7, small plain bowl with burial 1.

The Gordon site occupants of the early period, when round structures were in vogue, made three-quarters of their pottery undecorated, using clay grit temper often with ground charcoal admixed, and either smoothed the surface or polished it to some degree. Over a third of their decorated pottery was characterized by a distinctive parallel line incising below the rim. About one-sixth of such parallel line incising had some degree of overhang, usually accompanied by squared or triangular punctations below the line series. This motif may have been derived from rim-incised Marksville, but it was widespread beyond the lower Mississippi area. Potters at the Davis site in northeast Texas during a roughly corresponding period were making a similar decorative motif associated with Davis Incised (Newell and Krieger, 1949). And at the same time, there appears at the Gordon site a significant amount of curvilinear incised punctated, reminiscent of Churupa Punctated, but with still closer resemblance to Crockett Curvilinear Incised of the Davis site with its punctations outside the parallel curvilinear motif. However (Fig. 54, *15, 19, 20*), the Gordon site potters sometimes filled in the parallel lines with punctations. There is a suggestion of Mazique and Manchac in the Dunkin Incised of the Davis site, and among the unidentified sherds at Gordon are some of the "ticks, spurs or tiny pendant triangles" on finely incised lines which Krieger notes in Haley Focus wares. The carinated forms of Davis Incised, Crockett Curvilinear Incised bowls and the straight-sided pots of Dunkin Incised are as relevant to their Gordon site counterparts as are the decorative motifs.

The suggested correlation of Coles Creek with elements of the Davis site, notably phase 3 of the Alto focus, has been recognized by Krieger (Newell and Krieger, 1949, pp. 236-7) who notes that "Phase 1 of the Alto Focus might cross-date with an early Coles Creek period through a minor but important use of scrolls in an incised-polished over technique. . . ." And in the second of his three alternative theories (which seem particularly to suit the evidence here reviewed, although he may favor the Davis site correlation with Burial Mound cultures on the one hand and with Middle American Formative period on the other), Krieger proposes:

> The Alto Focus at the Davis site "was a fusion of Mississippian (or Temple Mound) and late Middle American traits plus some local inventions or modifications in house patterns and ceramic styles. The beginnings of occupation can be correlated in a general way with the Coles Creek horizon through such pottery types as *Davis Incised* and *Crockett Curvilinear Incised*, small light arrow points of the type Alba Barbed, the delicately made long-stemmed pottery pipes, and perhaps the ring-shaped pottery ear spools. In this case Alto Focus is another Temple Mound I unit approximately coeval with Coles Creek, Weeden Island, Spiro, Old Village (Cahokia), and others which preceded the Temple Mound II period of shell-tempered pottery. . ."

Krieger (personal communication) notes that these long-stemmed pottery pipes occurred in graves of "pure Alto Focus" and are not Coles Creek "here or anywhere else . . . it is a Gibson trait entirely."

An exception at the Gordon site is the absence of ring-shaped pottery ear spools. At Greenhouse, however, solid clay plugs, 6 fragments of clay pipes, including elbow, modified platforms and tubes without stem, were present, as well as 10 baked clay human figurines (Ford, 1951).

The close similarity of Gordon site structures to those of the Davis site supplements ceramic data admirably, for at both sites, wholly or partially under the fill of the respective mounds, we have instances of rectangular structures with posts set in trenches superimposed on circular structures of single, dug post holes. The rectangular wall trench structure at Davis corresponds with rectangular feature 3 at Gordon except that the latter wall trenches did not join at the corners, while the former had continuous, rounded corners; also the earlier circular structure at Davis corresponds with the primary circular feature 5 at Gordon. Burning of the rectangular structures is indicated at both sites, although no floor could be found for either circular structure to indicate burning, and neither the Davis nor the Gordon circular structure had indication of an associated fireplace. Within the mound proper at Davis, two other rectangular buildings, possibly burned, were superimposed on a round one. Both of these features, however, were composed of individually dug post holes, the rectangular structure showing no wall trenches. Again, at Gordon, a rectangular structure had a round fire basin in the center. At the Davis site, fire basins, clay lined, were present in two square structures.

Structural resemblances are significant, if less pronounced, between Gordon and Greenhouse. The Greenhouse circular structures are early and correspond closely with the circular building at Gordon, but the rectangular structures which followed at Greenhouse lacked trench molds (Ford, 1951), as did late rectangular walls at Gordon, mound B.

Quimby reports a structure sequence at the Medora site which also parallels that at Gordon, this time a circular trench and mold pattern superseded by rectangular walls of individual post molds and at least one rectangle of trench molds. The Medora site, termed "classic" Plaquemine, shares a remarkable ceramic trait correspondence with Gordon, except for a comparatively weaker showing of Coles Creek Incised at Medora (Quimby, 1951).

A significant difference between the Gordon and Davis sites may be the lack of burials or human sacrificial evidence at Davis which so characterized Gordon. On the other hand, clustered burials at mound C of the Greenhouse site suggest dumping of bones from a charnel house (Ford, 1951), a trait worth bearing in mind as a possibility at Gordon, especially burial 4 of mound A.

The Gordon, Davis, Medora and Greenhouse sites manifest the primary features of Temple Mound I as noted by Ford and Willey (1941, pp. 344-51). This was the construction on top of truncated mounds of temples containing circular fire basins. In earlier periods these temples were round and sometimes lacked fire pits, but in the early Mississippian period they were replaced with rectangular structures with fire basins. The temples were destroyed at the culmination of their use (certainly by fire in the case of the rectangular structures) after which new soil was added to the embankment and another temple was built over the old one.

In commenting upon the Davis site evidence that Alto is early Mississippian, Willey concludes, "This early appearance of the platform or temple mound has further verification in the association of platform mounds with Marksville-Hopewellian type ceramics in the Troyville period of Louisiana" (Willey, 1949).

The closely-related Greenhouse site included one mound, C, in which 84 human and 9 dog skeletons were located, mainly in the upper portion of the fill and in a restricted rectangular area. These burials, like those of Gordon mound A, were often fragmentary, and there was, as in mound A, no structural evidence. Cremation, present at Greenhouse mound C, however, is absent at Gordon. Ford, by correspondence in 1951, comments plausibly that the Gordon site appears to fit into a very short span of time connecting late Coles Creek and Plaquemine. This fits just above and below his "Time C" (Ford, 1951). Ford also observes that, allowing for differences due to geography, Gordon appears to occupy the same length of time and the same chronological position as the Davis and Medora sites, both of which evidence cultural change.

Griffin (Griffin, 1946, p. 80) once suggested "the term 'Coles Creek' has been applied to quite a number of differing cultural assemblages so that now the exact meaning is obscure. It is difficult to tell whether Coles Creek is a time period, a ceramic complex or both, and suitable criteria for its differentiation and recognition are lacking." Krieger has noted "The terms 'Early' and 'Late' Coles Creek have come into the literature without explanation of how they are to be determined, and we need especially to know what Coles Creek represents in terms of transition from the Troyville period on the one hand, and into Plaquemine on the other" (Krieger, 1946, p. 255).

Since the appearance of the Greenhouse and Medora studies, the traits at the respective Coles Creek and Plaquemine sites have been better correlated; nevertheless, it remains doubtful that Coles Creek pottery types can be associated with one temple type, one lithic series, or a consistent temporal horizon. This progression from Troyville to Plaquemine appears to have been of no long duration, with Coles Creek types common to both.

The 1941 observations of Ford and Willey that Coles Creek in Louisiana probably lasted until the middle of the 16th Century were made before the extent of the Plaquemine period was recognized. Therefore, as Quimby has noted, the transitions from Coles Creek to Plaquemine may have taken place before (or by) De Soto's time.

The Gordon site actually provides the needed transition between Temple Mound I (human burials, possibly sacrificial, within the mounds, circular structures with posts set first in single holes and later in trenches, Mulberry Creek Cordmarked and Troyville ceramics)

and Temple Mound II (rectangular temples with wall posts set in trenches, brushed and incised wares characterizing the Plaquemine tradition). But the bridge could have been made as easily without the use of Coles Creek as a cultural term at all. Coles Creek Incised is simply a distinctive motif which first appears with Troyville associations as a rather thick, moderately hard, clay grit paste in straight-sided, flat-bottomed pots. The parallel incising beneath the rim consists of totally overhanging lines in a series, below which are triangular, wedge-shaped punctations made with a square-tipped stick held at an angle. When Troyville mound building traits give way to Plaquemine and brushed pottery is introduced, Coles Creek Incised tends to lose its typical overhanging line, becomes generally thinner and harder of paste—less like Troyville paste—and merges with Hardy Incised. Fatherland Incised is present at this transition period, but Plaquemine Brushed ware remains dominant until the culmination of temple mound building in Temple Mound II when it gives way to characteristic Natchezan pottery types (Cotter, 1951).

The manner in which a similar transition is accomplished in the Gibson aspect, specifically at the Alto focus, provides an intriguing parallel. From lingering Marksville and Copena traces, the Alto focus at the Davis site progresses toward true Temple Mound II characteristics.

Looking northward and eastward, further comparisons with the trait ensemble at the Gordon site are to be found wherever sites of the Temple Mound period are progressing from developmental to developed stages, notably the river valleys where Mississippi or Middle Mississippi culture flourished, in Arkansas, Mississippi, Alabama, Tennessee, southern Missouri, Kentucky, Illinois, Indiana and Ohio. Here are the same centralid people, often with occipital deformation, living in riverine valleys and practicing the cultivation of food plants. The houses of the villages were originally circular, giving way to rectangular. Likewise, the ceremonial structures on truncated mounds were ultimately rectangular, supplanting earlier circular ones. The abandonment of impressing and stamping techniques in favor of incising and painting is notable.

Along the Georgia-Florida gulf coast, and considerably inland, inhabitants who were mainly centralids gave up circular houses and ceremonial structures for rectangular models, began building flat-topped mounds on which to base temples, and came to prefer incised rather than impressed designs on pottery. Thus, Moundville of northern Alabama, Etowah-Dallas and Savannah of east Tennessee-north Georgia, Irene of the Georgia coast, Swift Creek II, Moundville and Ft. Walton of south Georgia and northwest Florida with Weeden Island and the Gulf Tradition — all suggest these peculiar influences which accompany the spread of shapes, incising techniques and motifs characteristic of the transitional Coles Creek tradition, whether or not certain Burial Mound II traits remained. Significantly, the incising techniques seem to have spread eastward in the late (developed) Mississippian or Temple Mound II period, but the check stamping techniques, probably derived from Florida, fade out in the Coles Creek area as Plaquemine times are approached. The almost universal cord-impressed pottery of the east which reached the Rockies and even Middle America, seems to disappear in Temple Mound I as Coles Creek gives way to Hardy Incised.

Even in peninsular Florida, St. Johns IIa contains Mississippian influence in the form of trade pottery and temple mounds.

Goggin has suggested that

> The far flung Hopewell complex somewhat later reached Florida, and perhaps was an important source of traits which, through local reworking were to give such a unique flavor to the Gulf Tradition. And, in turn, the distinct influences of the tradition spread outwards from Florida as far west as, and to some extent up, the Mississippi Valley (Goggin 1949 p. 41).

Perhaps, indeed, this is the origin of Marksville. Although, as Ford believes, Coles Creek ceramic tradition may derive from Marksville, the advent of temple mound building, certain small arrowheads, more intensive agriculture and certain ceramic influences (notably carinate bowl shapes and a new employment of incising and engraving) indicate the addition of Middle American ceramic and many other traits being disseminated from the Mississippi Gulf region westward to New Mexico and eastward to Florida.

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AN EARLY MAN SITE IN MONTANA

RICHARD G. FORBIS AND JOHN D. SPERRY

THE MacHAFFIE SITE, in the foothills a few miles south of Helena, Montana, is an unusual open site in that it has three occupation levels. Folsom Fluted points occur in the bottom; Scottsbluff points in the middle; later types of points comparable to Signal Butte II come from the top level. In 1938 A. J. Harstad, an amateur mineralogist from Helena, discovered the site. He saw flint and bones projecting from a cut bank; he later pointed these out to E. D. MacHaffie, also of Helena. In a surface survey, MacHaffie discovered artifacts of a late type, and Mrs. MacHaffie also found a Clovis Fluted point in the small creek near the site and possibly from the site itself (Fig. 62, *12*). On a later visit MacHaffie found a point of Scottsbluff type on the surface. At this time he dug into the cut bank and found bones, chips, and some flaked knives.

In 1947, a River Basin Survey party, consisting of Jack T. Hughes, J. M. Shippee, and George Pierce, under the direction of Wesley L. Bliss, arrived at the projected Canyon Ferry dam, near the site of MacHaffie's explorations. Here they met MacHaffie, who had become renowned in Helena for his collection of archaeological material. Bliss immediately recognized the importance of the two points MacHaffie had from the site. Trowelling along the same groove MacHaffie had already established, Bliss uncovered a fine Scottsbluff specimen. He later reported the site and its importance (Bliss, 1949, pp. 125-6).

In 1949, Carling I. Malouf, of Montana State University, and Richard G. Forbis were engaged by the River Basin Survey to continue the salvage archaeological work at Canyon Ferry. MacHaffie showed them the site, but no work was done at this time. Finally Malouf returned to the site in the fall of 1950, and discovered clues to another level at the site, below the one yielding Scottsbluff specimens.

For the summer of 1951, W. Duncan Strong, in the name of Columbia University, offered to sponsor a project at the MacHaffie site and provided most of the financial support. Funds from the American Museum of Natural History were also made available by Harry L. Shapiro. Montana State University participated through the efforts of Paul C. Phillips, W. P. Clark, and Carling Malouf. The actual field party, under Forbis, included John D. Sperry, Paul Tolstoy, and Robert J. Fischer. James Bompart, a Helena stockman, permitted excavations on his land and offered every hospitality within his power.

A brief but by no means an exhaustive analysis of the geology of the site will aid in understanding the stratigraphy of the site. As defined here the site is the low escarpment which produced artifacts from all three levels —Folsom, Scottsbluff, and Upper. It is bounded on three sides by watercourses which have cut banks about six feet below the surface of the projecting point of land (Fig. 61). The major part of the excavations was carried out on the peninsula, for test pits in other areas revealed only top level artifacts and different kinds of soils.

At the site, the lowest level is a sterile stratum consisting of coarse, vari-colored, waterborn sands. A test pit to ground water showed the sands to be at least five feet deep, where, at their lowest explored level, they are highly consolidated and suggest decomposed granite boulders. Above the sands, embedded in a distinctive, fine-grained, smooth-textured black soil were the Folsom Fluted artifacts and chips. The upper surfaces of the black soil grade variably into compact, fine-grained, gray clay, which in turn is surmounted by a soft, smooth-textured, gray soil of apparently similar mineral composition. The depth of these gray soils averages about one foot. Scottsbluff artifacts and chips were massed in a zone about four inches thick, close to the boundary of the hard and soft gray clays.

Soils above the clay are distinct from the clay but not sharply different from each other. They go from a red soil resting on the gray, through a light brown, to a black sod on the surface. The red soil, usually over a foot thick, is virtually sterile and is apparently the result of alluvial drift. The light-brown soil, nearly sterile, is about six inches thick. As in the red soil, a few chips and artifacts were found, but with little suggestion of a definite level of occurrence. Top soil, three to five inches thick, contained many prehistoric specimens.

While no thorough effort was made to find the kinds of stone at hand for prehistoric campers at the MacHaffie site, there is a wide

variety of chalcedonies near the site. The red, semi-translucent type often found in bottom level chips, and red-to-caramel-colored, opaque flints of most Folsom artifacts, are abundant. Typical, translucent, blue-tinged flints of the next level are scarce. Obsidian, used in the Scottsbluff and Upper levels, occurs in an outcrop about a mile to the south.

The variety of tool types from the bottom level of the MacHaffie site suggests that it was a campground for the makers of Folsom Fluted points. Aside from these points, there are choppers, scrapers, knives, and flake knives. Points include only one definitive specimen and that is the broken base of a point which is well chipped along its sides and skilfully fluted (Fig. 62, 9). Another point may also be a Folsom Fluted specimen, but it is broken diagonally across the base and cannot be positively identified (Fig. 62, *10*). Apparently fluted on one side, the other face is simply chipped along the base, perhaps because the point is too thin to be fluted on both sides. One other specimen which might be a Folsom Fluted point is more doubtful, since it seems to be a fragment from one side of a point (Fig. 62, *11*). A channel flake may fit onto this fragment, bearing out the belief that it is indeed part of a point. The point which Mrs. MacHaffie found in the stream might have come from the site proper; but presently there is more reason for believing it did not, because typologically there are no grounds for including this Clovis Fluted with Folsom Fluted points. (For the distinction, see Howard, 1943, p. 230.) All the types of artifacts turned up at the MacHaffie site more or less duplicate those from the better-known Lindenmeier site in northeastern Colorado (Roberts, 1935, 1936). Turtleback scrapers were particularly plentiful, proportionally, in the MacHaffie site. Only broken knives were found, but what remains of them indicates that they were long, narrow and well-chipped, with rounded ends. Flake knives have the same shapeless character as those from the Lindenmeier site: one or two edges of a flint flake were worked into a sharp cutting tool, while the rest of it was left in its natural state. Some scrapers were made in the same way and can be told from knives only on the basis of whether they were chipped on one or both sides. Roberts calls them "rough-flake scrapers." A refinement of this type was found at the MacHaffie site: a triangular scraper shaped like some from the Lindenmeier site, but chipped primarily on the end rather than on the sides. To complete the list of types from the MacHaffie site bottom level, the ordinary snub-nose scraper made its appearance.

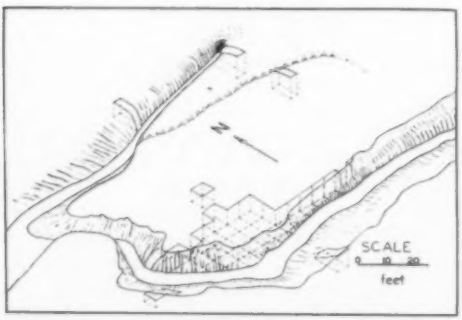

FIG. 61. Perspective drawing of the MacHaffie site. Dotted lines indicate excavated areas.

Morris Skinner, George Goodwin, and T. Donald Carter of the American Museum of Natural History identified the animal remains from the MacHaffie site and they are strikingly like those from the Lindenmeier site. Where bones of bison, wolf, fox, and rabbit are reported by Roberts for Lindenmeier, bison, deer, wolf, and rabbit appeared in the Folsom level of the MacHaffie site. Because the bones are fragmentary and because there are no horn cores for the bison, the species of animals cannot be identified. The bison is larger than the modern species. No object made of any bone, nor any gravers or other tools for working bone were found. While human skeletal remains could have provided exciting additions to the physical anthropology of North America, the MacHaffie site, like all other yet known Folsom Fluted and Scottsbluff sites, had none. A consistent failure to locate human bones at early man sites supports the theory that the dead were disposed of away from campgrounds and workshops.

Artifacts from the Scottsbluff level are like those from the Folsom Fluted level in function. There are scrapers, knives, flake knives, choppers, and points. Thus it is reasonable to conclude that these people, like the makers of the Folsom Fluted points, were hunters and gatherers. The major differences lie in the forms of the artifacts. Several points were unearthed, most of them like the type known

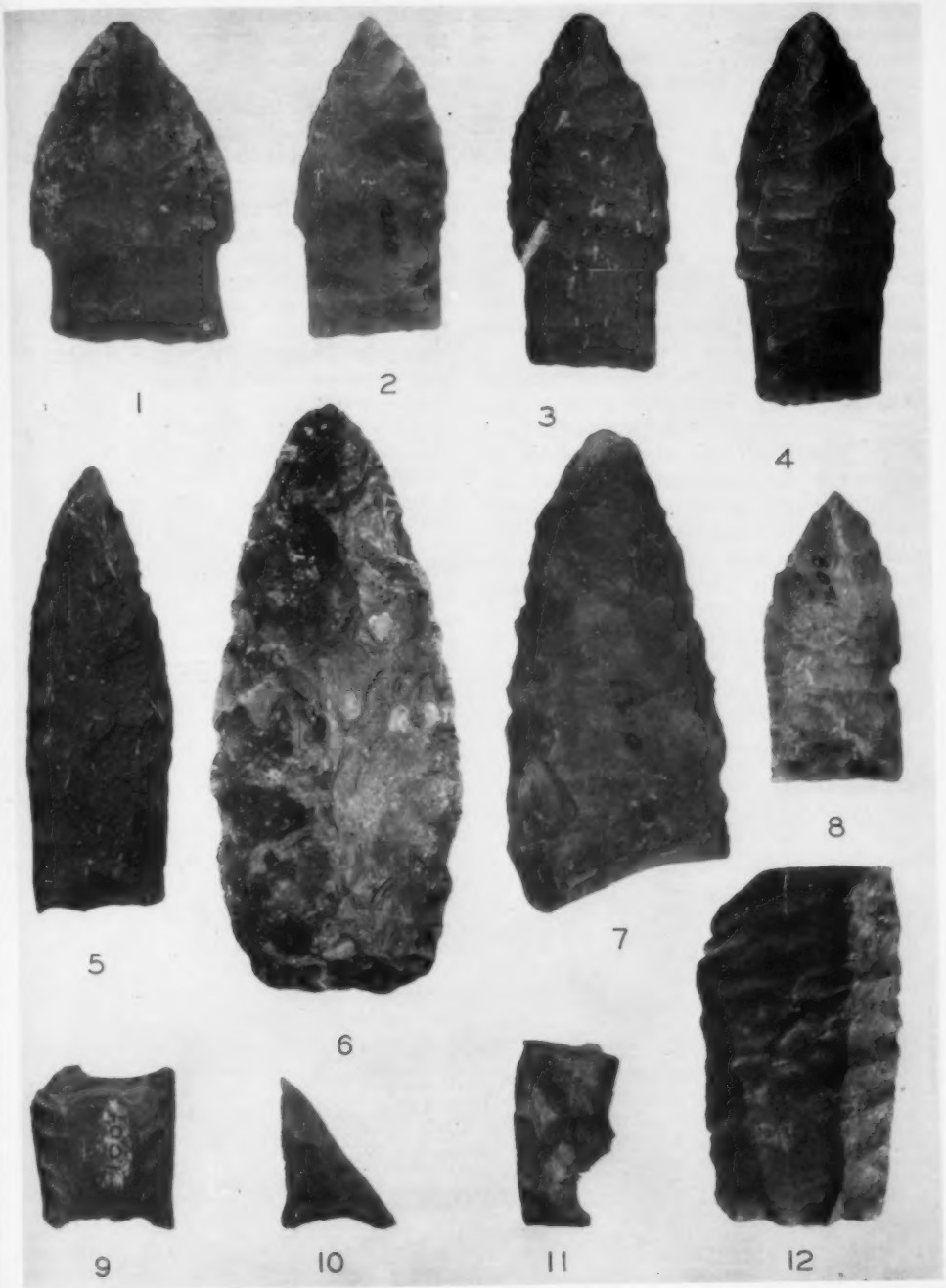

FIG. 62. Scottsbluff and Folsom Fluted Points from the MacHaffie site. *1*, Scottsbluff point found by Mr. MacHaffie; *2-5*, *8*, Scottsbluff points; *6*, *7*, lanceolate points from the Scottsbluff level; *9-11*, Folsom Fluted point fragments; *12*, Clovis Fluted point found by Mrs. MacHaffie. Actual size.

as Scottsbluff, although there are individual variations (Fig. 62, 1-5, 8). Some have no shoulders, although they are basally ground up to the point where stemming would ordinarily stop. There is another type of point from the second level. The two specimens in this type are lanceolate (Fig. 62, 6, 7). Flaking on them, compared with Scottsbluff points, is crude and uneven. Scrapers from the Scottsbluff level follow the tradition of the bottom level in the snub-nose type. Rough-flake scrapers are not common, but are large. Besides these forms, there is a kind of scraper made of an oval flake cracked from the sides of water-worn quartzite cobbles and battered against a stone until crudely retouched, a type known as "tci thos" (Rainey, 1940, p. 301). The formless flake knives of the Folsom level have by the time of the Scottsbluff level almost entirely disappeared in favor of definitely shaped flint knife forms; most knives are rectangular with slightly rounded tips.

Resemblances between the Lime Creek site Ft-41 in Nebraska (Schultz and Frankforter, 1948) and the Scottsbluff level of the MacHaffie site are so close that they cannot be ignored. One of the points from Ft-41 (Fig. 7, 7554) can be paired with a Scottsbluff point from the MacHaffie site (Fig. 62, 4). The "most distinctive and abundant type of blade" from Ft-41 turns out to be the most common knife at the MacHaffie site. Snub-nose scrapers can be duplicated. Sandstone abraders, present from both sites, differ slightly in shape. One notable difference is this: bone and antler tools were excavated at Lime Creek, while none appeared at the MacHaffie site. In spite of minor differences, however, it seems most reasonable to link both sites together as manifestations of the same culture. Animal bones from the Scottsbluff level again show the presence of bison, but, as in the Folsom level, the remains are so shattered that the species cannot be identified. Antelope, rabbit, and ground squirrel bones also appeared at this level.

Cultural remains from the top level are far more diverse than those from the two cultures beneath it. The predominant point types — triangular notched and unnotched—are reminiscent of Signal Butte II (Fig. 63, 1-6). There is no need to give a detailed description of other artifacts in the heterogeneous collection from the Upper level; it is enough to say that almost all tools exposed in the lower levels are also found in the top, with some exceptions and minor changes in form. Essentially their function is much the same as in the two older cultures.

Fig. 63. Upper Level Points from the MacHaffie site. Actual Size.

The three levels are much alike in the respect that they all represent hunting and gathering peoples. When white men first entered the Helena Valley, they saw Indians with an economy of the same kind. Assuming the dates commonly assigned to Folsom Fluted points are right, the same way of life lasted in this area for about 10,000 years, a continuous unchanging way of life, if material culture be taken as an index. Uniformity is evident in animal as well as in cultural remains. While the same species of bison is not represented in all levels, the difference in species is not likely to mirror any outstanding change in climate. All the other animals from the site still inhabit the area; and bison lived there until they were wiped out shortly after whites moved in. Uniformity is the key to a proper understanding to the stream of life manifested at the MacHaffie site.

To summarize briefly the finds at the MacHaffie site: there are three occupation levels. On the bottom is a Folsom Fluted complex; in the middle the remains of a Scottsbluff culture; and on top some artifacts resembling those from Signal Butte II. What follows is an attempt to place these finds into larger archaeological context. The chart (Fig. 64) serves as a guide.

As Krieger has already pointed out in his paper on the sequence of point types in North America, there is still no way to tell which is the oldest known point type on the continent (Krieger, 1950, p. 118). Folsom Fluted points lie stratigraphically above Sandia points at Sandia Cave, New Mexico (Hibben, 1941, p. 18), and Folsom are above Clovis Fluted at the Clovis site in New Mexico, as Cotter (1937, p. 15) evidently suspected and Sellards recently demonstrated (personal communication). Mammoth remains have been noted with both Clovis Fluted and Sandia points, but not with Folsom.

San Jon points, from the type site in New Mexico, came from the same stratum as a Folsom Fluted point was weathering from and may be the same age as Folsom Fluted (Roberts, 1942, p. 25). There is an astonishing resemblance between the San Jon type and some points from the Scottsbluff level of the MacHaffie site. Judging by photographs and drawings, which are inadequate, certain features appear to be lodged in both: the style of chipping, the squared smoothed base, and the shape and size of the points. They differ in that the San Jon point has a blunted tip and may be thicker in cross section.

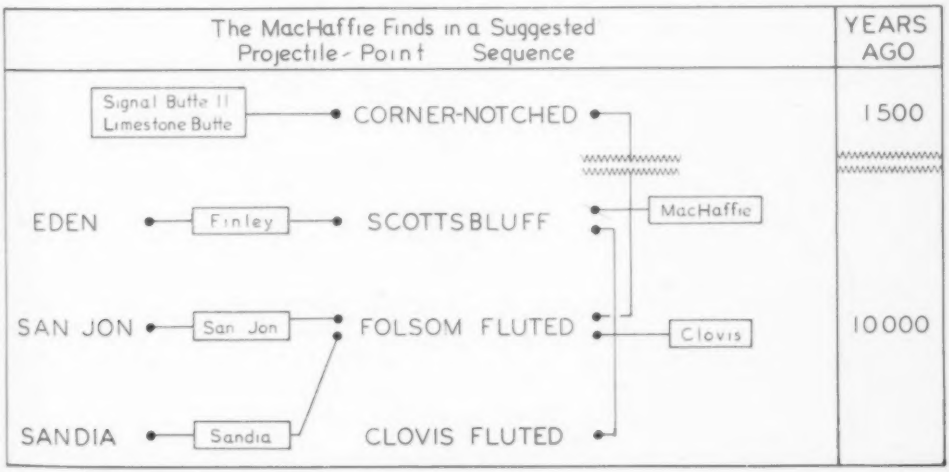

FIG. 64. A sequence of point types with special reference to the finds at the MacHaffie site. Point types, in capital letters, are placed in sequence or association by vertical or horizontal lines respectively. Boxed names refer to site where sequence or association was found. (For instance, Scottsbluff and Eden points were associated at the Finley site.) Zigzag lines indicate a considerable break in time.

Twice before the excavation of the MacHaffie site, Folsom Fluted points were observed below Scottsbluff types. The first reported case was at San Jon (Roberts, 1942, p. 9); the second, still unpublished, was discovered by E. H. Sellards at the Clovis site, according to a letter from him. The fact that Scottsbluff lie above Folsom Fluted points in three different localities, one separated by over a thousand miles from the others, is a powerful sign that this sequence is valid for a wide area. While the occurrence of Folsom Fluted above Clovis Fluted is so far limited to a small area in the Southwest, the sequence—Clovis Fluted, Folsom Fluted, Scottsbluff—is acceptable as a working tool, a tool which can be given up whenever contradictory evidence comes to light.

Eden points are evidently roughly parallel in time to Scottsbluff, since they occur together in the Finley site in Wyoming (Howard, 1943, p. 234), the Scottsbluff site in Nebraska (Roberts, personal communication, 1951), and others. All these Scottsbluff points, from the evidence at hand, differ from the MacHaffie and Lime Creek specimens in that they are longer, broader, apparently flatter, and more decidedly stemmed. Possibly there is a cultural difference reflected by the divergences in point forms. To bolster this argument, it seems that while the large Scottsbluff type is associated with Eden points, the small Scottsbluff type is not.* This argument cannot be pushed too hard, however, because it is based on scant evidence.

* Large and small Scottsbluff types are not differentiated on Figure 64.

Upper level points from the MacHaffie site are much like Signal Butte II points (Strong, 1935, pp. 232-3). Since points from later complexes have not had the same attention lavished on them as the earlier types, the connections proposed here are more tentative. Hughes found at Limestone Butte in the Angostura region of South Dakota a culture which he related to Signal Butte II and he dated it about 1,500 years old (Hughes, 1948, pp. 272-3). Roughly the same date probably holds for all three of these related cultures.

Obvious difficulties are inherent in Figure 64. First, the area where these points are found is large but, since differences in space may actually mean differences in time, any chart is weak which purports to apply both to the High Plains and Rocky Mountain West. Second, there is the question of typology. Until adequate work has been done along this line, distributional studies and placing points in time will be ineffectual. For instance, if the large and small Scottsbluff specimens define distinct cultural types, they would hardly be found at the same place and at the same time level, except by the greatest coincidence.

These are the major difficulties in any typological sequence intended to apply to a region as vast as the American West. They are given here only to warn the reader of the pitfalls of the chart, shown as Figure 64. However, in spite of its shortcomings, the authors feel that this chart is valid and that it adequately demonstrates how the points from the MacHaffie site fit into the early man sequence.

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Department of Anthropology
Columbia University
March, 1952

AN EARLY IMPLEMENT ASSEMBLAGE FROM A LIMESTONE CAVERN IN CALIFORNIA

WILLIAM J. WALLACE AND DONALD W. LATHRAP

HAWVER CAVE, located about two miles from Cool, El Dorado County, California, is well known to paleontologists for its abundant and diversified Pleistocene fauna. The fossil animal remains have been described in several monographs (Furlong, 1907; Stock, 1918; Miller, 1912; Kellogg, 1912). The occurrence of human skeletal material has also been noted (Merriam, 1909; Stock, 1918, pp. 466-8), but an interesting series of artifacts recovered from the cave has received only brief mention in a newspaper article (Hamilton, 1910). These man-made objects are, on the whole, distinct from those manufactured by the historic Indians of the region and seem worthy of detailed analysis. Before describing the artifacts, however, it is necessary to review some of the facts pertaining to the cave and its contents.

Formerly called "Quarry Cave" and "Lake Cave," the cavern was extensive and complicated. Situated at an elevation of about 1300 feet it centered in a narrow strip or lens of limestone a little to the south of the Middle Fork of the American River. Its fissures were developed during the Pleistocene. Later much of the interior was partially or entirely filled with fragments of stone and a reddish-brown clay derived from the surface and from impurities in the limestone.

The entrance was an almost perpendicular crevice, 40 feet deep. Below were several passages and chambers of varying dimensions. Pools of water stood in all the principal rooms even during the summer months. The water was still at work dissolving certain areas of the limestone as well as closing cavities by the deposition of carbonate of lime. Furlong (1907) gives a detailed description of the cave.

Apparently discovered in the early eighties by men quarrying for limestone, Hawver cave helped to supply lime for the kiln at nearby Pioneer cave. A few local people and tourists explored its passages but apparently it attracted little attention outside of the immediate region. In December, 1906, several partially calcified bones were seen protruding from the cave deposit. Additional osseous material was soon located.

These finds were reported by J. C. Hawver of Auburn to J. C. Merriam at the University of California and E. L. Furlong was sent to investigate. Furlong identified the bones as belonging to extinct species but was prevented from making a complete examination by a rise of the water level. Hawver subsequently excavated and collected much additional skeletal material. N. C. Nelson, representing the Department of Anthropology, University of California, visited the cave and commenced mapping its passages and chamber. His preliminary sketches were deposited at the University, but the final map was never drawn. In October, 1910, A. L. Kroeber spent a day at the cavern with Hawver. Professor Kroeber collected several bone samples and made a sketch of the grotto.

In recognition of Hawver's energetic exploration, the cavern was renamed in his honor. Quarrying operations continued, however, until the cave was completely destroyed.

Fossil animal remains were numerous in the lower chambers and passages; a few were recovered in the shaft below the cave entrance. The majority were encased in a hard matrix of cave breccia. For the most part, the material was broken and scattered and the bones had every appearance of having gradually accumulated by falling and washing in from the surface. The fossils have already been described. Suffice it to say that 24 vertebrate species were represented, among them such typical Pleistocene creatures as the groundsloth, mastodon, horse, bison, and possibly saber-tooth cat. Included also were certain forms — particularly smaller carnivores and rodents — similar to, if not identical with, modern animals living in the general region.

In March, 1908, while attempting to clear what Hawver surmised to be an ancient passage to the lower cave, a number of human bones were uncovered. These were 20 feet below the entrance under a loose mass of

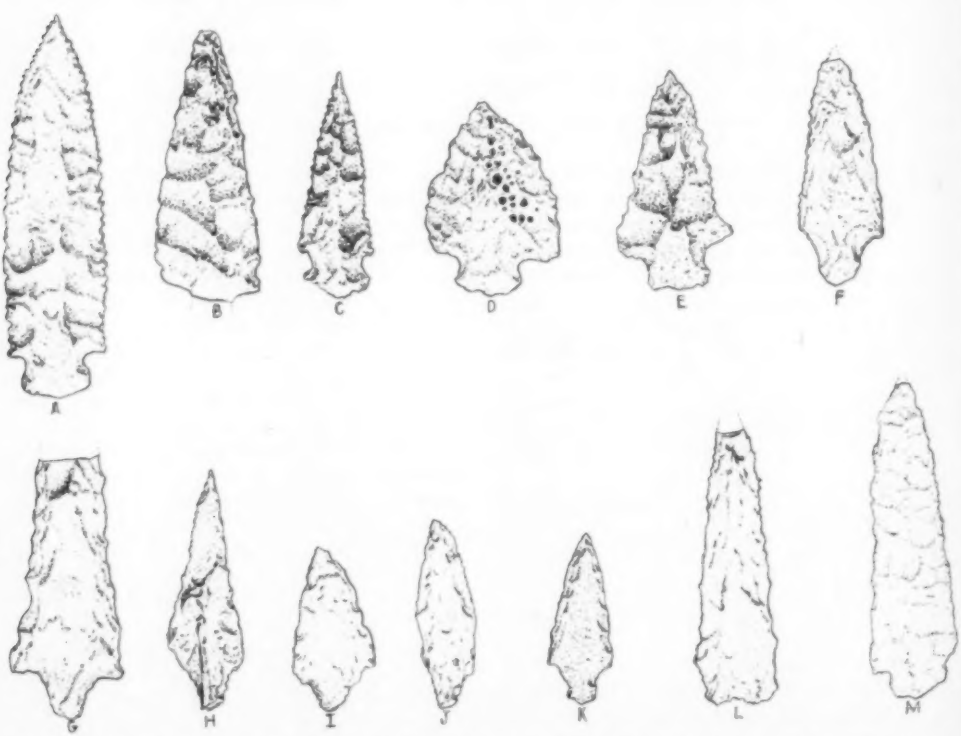

FIG. 65. Hawver cave projectile points. *a-f*, basalt; *g-l*, slate, *m*, limestone (?). Length of *a*, 11.17 cm.

earth and rock. The bones were broken and scattered and no complete skeleton was found. Continued excavation in 1909 and 1910 turned up more dissociated bones of man. How many individuals were represented is conjectural, perhaps several score.

The human remains all lay at the lower end of the principal shaft. None was found in any other section of the grotto. Several bones of extinct animals were found nearby. Some of the human material was imbedded in the cemented breccia and part of the specimens had lost much of their organic matter. Marks of teeth, evidently left by gnawing porcupines, marred the surfaces of many.

The position of the bones directly beneath the entrance suggests that they were those of dead Indians, disposed of by being thrown into the cave mouth. In the process of decay parts of the bodies were strewn over a considerable area. The action of water and soil movement helped to scatter them still further. The human remains generally resemble in type those of recent California Indians.

A chemical analysis of several fragments of human long bones and two ground sloth bones was made by S. F. Cook. Certain chemical changes take place in bone after burial in the soil. These alterations may be used to determine the chronological relationship of specimens recovered from one site or deposit. The technique of bone chemistry is described in Heizer and Cook (1949). The degree of alteration of human and animal remains differed apparently indicating non-contemporaneity of man and sloth. The human skeletal material itself showed no consistency in chemical composition indicating that it was not all introduced into the cavern at the same time. Some specimens had undergone profound change, others had changed but slightly. The human osseous remains described as imbedded in the breccia could not be located for analysis. It is possible that these may have had a greater antiquity than the samples analyzed.

Seventeen stone and two bone artifacts were recovered by Hawver from the deposit containing human skeletal remains. The preponderance of complete specimens suggests that these found their way into the cave as burial accompaniments. All were located below the surface of the loose material at varying depths from about two to fifteen or more feet.

Thirteen flaked stone implements which can broadly be classified as projectile points were found. These are too large and heavy to have been adapted for use on arrows and the majority would have been most serviceable as lance or spear points or as dart points used with atlatls. Some perhaps should be labeled as blades, employed as knives hafted in short handles. Three materials were used in their manufacture: dark gray basalt; slate, ranging in color from grayish-green, to grayish blue; and an unidentified chalky-white substance, conceivably a limestone. None of the substances was particularly amenable to well-controlled chipping and this gives some specimens a rather crude appearance. Both the basalt and slate chipped points are noticeably altered in surface color and texture.

The basalt points are thick and heavy and, with one exception, have long blades. All are stemmed. Lateral notches which tend to be broad and shallow are characteristic, though a somewhat oblique placement of the notch occurs in one specimen. Flake scars are coarse on the surface but secondary chipping around the borders is relatively fine. Serration is general.

1. Expanding stem, rounded base; large U-shaped corner notches; percussion flaking on both surfaces with pressure flaking along edges; neatly serrated edges with projections more emphasized than on other specimens; length 11.17 cm, width 3.09, thickness .69; weight 26.8 grams (Fig. 65, *a*).

2. Basal portion missing, but probably like above; almost entirely percussion flaking and not as well made as previous specimen; present length 8.02 cm, width 3.18, thickness .72; weight 18.3 grams (Fig. 65, *b*).

3. Expanding stem, rounded base, large U-shaped side notches, narrow and tapering blade; length 6.78 cm., width 2.70, thickness .63; weight 7.5 grams (Fig. 65, *c*).

4. Expanding stem, rounded base; broad shallow side notches giving almost lateral tang; short and broad; length 5.68 cm., width 3.90, thickness .73; weight 16.1 grams (Fig. 65, *d*).

5. Expanding stem, square or slightly rounded base; large shallow corner notches, length 6.57 cm., width 3.48, thickness .86; weight 14.6 grams (Fig. 65, *e*).

6. Contracting stem, rounded base; broad, shallow corner or oblique lateral notches; almost entirely percussion flaking, not particularly well-made; general form similar to that of slate points; length 5.78 cm., width 2.53, thickness .63; weight 9.9 grams (Fig. 65, *f*).

Projectile points of slate are thin and flat in cross section. The worksmanship is probably equal to that of the basalt specimens though they have a cruder appearance and are more irregular in outline. This is a result of working in a material not well suited to chipping.

7. Contracting stem, rounded base; corners removed to give almost right angle shoulders; tip and portion of blade missing; present length 7.8 cm., width 3.35, thickness .74; weight 20.3 grams (Fig. 65, *g*).

8. Contracting stem, probably rounded base; corners removed to give irregular rounded shoulders; rather crudely flaked and irregular in outline; length 7.05 cm., width 2.80, thickness .61; weight 7.9 grams (Fig. 65, *h*).

9. Like 8 above though shorter and broader; tip missing; present length 4.79 cm., width 2.37, thickness .39; weight 5.0 grams (Fig. 65, *i*).

10. Like 8 and 9 above though even less carefully shaped and more irregular; length 5.68 cm., width 1.73, thickness .39; weight 5.2 grams (Fig. 65, *j*).

11. Straight-sided or slightly flaring stem, rounded base; corners carefully removed to give rounded shoulders; more symmetrical than other slate points; length 5.02 cm., width 1.84, thickness .45; weight 5.5 grams (Fig. 65, *k*).

12. Stemless, though originally may have had stem; small and shallow basal notch; blade long and narrow and well shaped; tip absent; present length 8.0 cm., width 2.32, thickness .49; weight 12.1 grams (Fig. 65, *l*).

13. The one limestone specimen had expanded stem, rounded base, shallow corner notches; long graceful blade with small section of tip missing; length 9.41, width 2.62, thickness .72; weight 15.3 grams (Fig. 65, *m*).

The Hawver cave projectile points are of different material and ruder manufacture than those of the late prehistoric and modern Indians. Obsidian was the substance preferred by the more recent inhabitants, and fine pressure flaking was characteristic. In general, their form, size and weight are suggestive of the Early Horizon of Central California (Heizer, 1949, Figs. *12, 13, 14*). The Hawver points, on the whole, are more roughly made than the early Sacramento ones, possibly because of the refractory stone, though similar materials were used by Early Horizon toolmakers. The cave specimens also resemble Gypsum points in a general way as do the early Sacramento forms (Harrington, 1933, Fig. 19; Rogers, 1939, Pl. 14). The fact that the Hawver cave people did not use obsidian agrees with the very widespread, practically continental, situation for ancient projectile points.

Three pestles and a mortar comprise the total of ground stone implements. None is particularly well-finished and most modification seems to have come through continued use. Except for the mortar, these are extremely widespread types in the Sierra Nevada region and abundantly represented in the relatively small archaeological collection from this area in the University of California Museum of Anthropology.

1. Mortar — flat-bottomed, globose, of vesicular lava; outer surface pecked and ground; cavity somewhat pointed; sharp-edged rim; maximum diameter 18 cm., height 14 cm., cavity measures 12.5 cm. across.

2. Pestle — Elongated river cobble of igneous rock. only slightly shaped; both ends used in pounding and grinding; one worn side from utilization as mano; length 16 cm., width 8.5 cm.

3. Pestle — Like above but smaller in size; length 12 cm., diameter 7 cm.

4. Pestle — Approximately one-half of crude cylindrical pestle of igneous rock; present length 11 cm., diameter 7 cm.

Two single-pointed implements fabricated from deer cannon bones were found. One (Fig. 66, *a*), is complete, though apparently found in two pieces and at different times. The head or distal articulation is left as a handle with both faces ground flat. The shaft was worked to a point by grinding from one side only, leaving the natural longitudinal groove on the reverse surface. The pointed tip is ground from both sides. The second specimen (Fig. 66, *b*), consists only of the shaft and point. It was probably identical to the other, however. These are slender and graceful objects, the complete specimen measuring 25.2 cm. in length, which may have served as daggers or hair ornaments. They are probably too large to have functioned as awls. Gifford's (1940) California bone artifact typology lists no pieces like these. Three similar objects from the Santa Barbara region have been described by Orr (In Gifford, 1947, p. 116). Two are from the early Oak Grove culture and constitute the only bone tools reported from that horizon; the third is from the later, though still prehistoric, Hunting Culture.

Though the data are far from complete, a few observations and conjectures can be made regarding human association with Hawver cave. Certainly, the cavern was not used as a dwelling place. It was unsuited for this purpose and no accumulation of camp refuse was reported. The remains of man and his tools were apparently dropped down the vertical shaft and in time became incorporated in the deposit below. Chemical differences in the human

bones suggest that Hawver cave was used as a depository for corpses over a long period of time. Entombment, often with grave offerings, in limestone grottoes seems to have been a widespread prehistoric practice in the Sierra Nevada foothills of California. It has been reported for several sites in Calaveras County (Wallace, 1951, p. 34-5.) Stone Man and Samwel caves in Shasta County may also have been used as natural burial vaults.

It is difficult to arrive at a reliable estimate of the age of the human skeletal and cultural material because dating is complicated by a number of factors. There is no evidence that the men who made the tools and whose bones were found in the cavern coexisted with the sloth, mastodon, and other extinct mammals whose skeletons were also in the cave, though such a possibility cannot be entirely ruled out. Even if the human material cannot be assigned to the Pleistocene, it seems, nonetheless, to have a respectable antiquity. The extreme chemical alteration exhibited by some of the skeletons must have occurred over a period of many centuries. The assemblage of artifacts includes types which have considerable age. The flaked stone points have typological affinities to forms from Early Horizon sites in the Sacramento Valley and perhaps to the Gypsum projectile points as well; the bone implements resemble specimens from deposits of the Oak Grove and Hunting cultures of the Santa Barbara region. The chronological relationships between the Sacramento Valley cultural horizons and those of the Santa Barbara coastal zone are not clear. Heizer and Fenenga (1939, pp. 395-6) concluded that Early Sacramento was comparable to the Santa Barbara Hunting period. No cultural remains analogous to the somewhat simple and nonspecialized culture of the Oak Grove people have yet been reported in the interior province of Central California. A tentative correlation by Orr (1943, p. 38) places the Oak Grove and Hunting periods prior to the Early Sacramento with overlapping occurring only in the terminal phases of Hunting. Detailed comparative study and archaeological research in the intervening region are needed before these two sequences can be harmonized. A starting date of 2500 B.C. has been suggested by Heizer (1949, p. 39) for the Early Horizon (Windmiller facies). A radiocarbon date of 4052 ± 160 years (Johnson, 1951, p. 13) essentially agrees with this estimate. Radiocarbon dates are not available for the Santa Barbara region.

Though the age of the Hawver finds cannot be definitely determined, the evidence in hand seems to indicate that part of the human skeletal material and the majority, if not all, of the artifacts go back in time at least four thousand years. This is probably a conservative estimate and the most moderate interpretation is not necessarily the correct one as the history of the investigation of early man in the New World attests. The Hawver material may antedate Early Sacramento by some centuries and perhaps represents a connecting link between this California horizon and the more ancient Gypsum level. This cannot be pronounced with certainty but it does represent an interesting possibility.

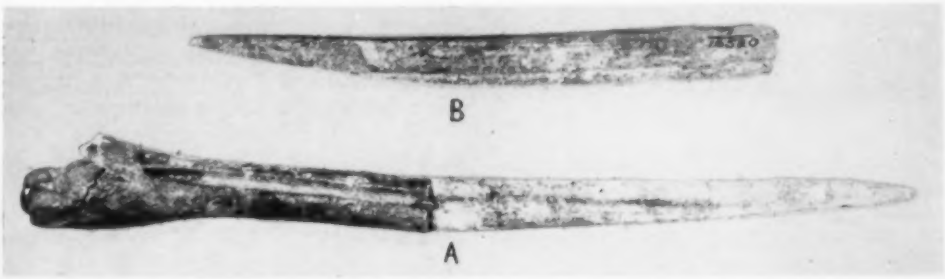

FIG. 66. Bone implements from Hawver cave. Length of *a*, 25.2 cm.

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William J. Wallace
University of Southern California
Los Angeles 7, California

Donald W. Lathrap
University of California
Berkeley 4, California

A PREHISTORIC SLING FROM LOVELOCK CAVE, NEVADA

ROBERT F. HEIZER AND IRMGARD W. JOHNSON

IN THE COLLECTION from Lovelock cave, gathered by Loud in 1912, there recently came to light a piece of finger-woven textile which, at first glance, appeared similar to the *Apocynum* fabric from Humboldt cave described by O'Neale (1947). Loud did not describe or mention the textile, though he illustrates it (Loud and Harrington, 1929, Pl. 53*a*), and one suspects that, being reluctant to disturb the bead strands to which it was affixed, he did not recognize the specimen for what it was.

The sling (Fig. 67, *a*), made probably of *Apocynum*, was wrapped with a compound necklace of *Olivella* shell bead strands and was found about the neck of a partially mummified child about 6 years old. The description of the necklace, the burial, and a photograph of the necklace itself with the sling clearly apparent, occur in Loud and Harrington's report on Lovelock cave (1929, p. 105, Pls. 10, 53*a*).

Unusual interest attaches to the specimen since it appears to be the very first prehistoric sling thus far recovered from North America. An early statement by Hough (in Hodge, 1910, Part 2, p. 602) and echoed by Means (1919, p. 317) to the effect that there is no absolute proof that the sling was known in North America north of the Rio Grande prior to the time of European discovery may now be finally corrected.

First, as to the occurrence and probable antiquity of the Lovelock cave specimen, we know only that it accompanied a child's body in a grave—the stratigraphic position of this grave with reference to Harrington's vertical sequence (Loud and Harrington, 1929, pp. 24-8) is unknown. Accepting the radiocarbon date for the earliest cultural refuse in Lovelock cave of 2482±260 years B.P. (average 532 B.C., range 272-792 B.C.), we may safely say that the specimen is certainly no older, and probably somewhat younger, than this date.

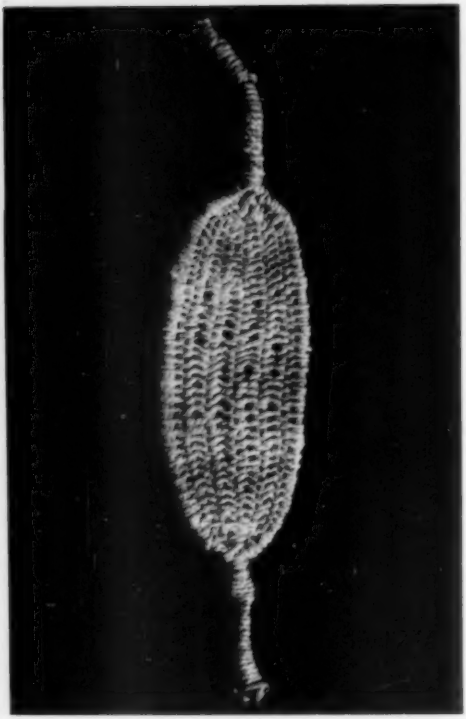
A Nevada cave is actually where we should hope to find such a specimen, for the dry conditions offer opportunity for complete preservation, and the Northern Paiute or Paviotso who occupied the area in historic times knew the sling (*takui'wu'wugö*, *tokwi'wuwui*) either as a toy (K1, K2, Kü, To, Tö, Pa, At, Sa, Tg, Wd and Ki groups) or for hunting and war (AE, Ts groups) according to Stewart (1941, elements 1031, 1031a, 1868a). The Paviotso of the Humboldt Lake and Lovelock cave region (Kü group) knew the sling only as a toy. Quite possibly our piece had such a function if we assume that the sling found with a 6-year-old child belonged to him, since a youth of such tender years could scarcely have done much real hunting, nor would he have engaged in actual warfare.

We had originally planned to present the worldwide distribution of the sling, but our single ancient specimen is not a very significant occurrence when projected into such a wide perspective, and the labor involved simply did not appear worth while. In lieu of an extended survey of the occurrence and use of the sling, we present in Figure 68 only the local western North American distribution with a brief summary of its wider occurrence.

In the Old World, and especially in Africa, the distribution of the sling has been carefully traced by Lindblom (1927, 1940). It may be noted as widespread in Europe and Asia, absent in Australia, and common in Indonesia, Melanesia and Polynesia (except Easter Island according to Metraux, 1940, p. 165). References to Old World occurrences not cited by Lindblom include those of Linton (1923, pp. 389-90, 452); Civil Affairs Handbook (1944, p. 47); and Krieger (1926, p. 11).

For North America Lindblom's two papers summarize and expand the data contained in earlier distributional studies by Birket-Smith (1929); Friederici (1910, 1915) and Spier (1928). Citations to the occurrence of the sling in this region, but not listed by Lindblom are: Osgood (1937, p. 92); Beals (1932, Map 21); Flannery (1939, pp. 74, 179); Swanton (1946, p. 587); McIlwraith (1949, pp. 341-42, 384); Tozzer (1941, pp. 11, 32, 121, 206); Vaillant (1941, Fig. 14); Loeb (1926, pp. 184-85, Pl. 2); Sahagun (1938, pp. 126-27); Toscano, Kirchoff and Borbolla (1946, Pl. 64, p. 64); Diaz (1927, pp. 30, 72, 142-43, 173, 250, 355-56, 404, 451); Carrasco (1950, p. 121).

The South American distribution has recently been summarized by Metraux (1949, pp. 252-53, Map 4), and further references are to be found in Montell (1929, pp. 51, 161); Zimmern (1949, Pl. 9), and Bird (1949, p. 25).



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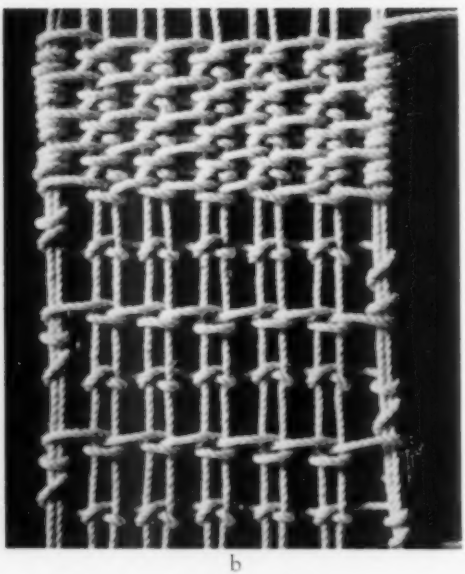

b

Fig. 67. Lovelock Sling pocket. *a*, sling pocket; *b*, reconstruction of technique seen in *a*.

Although not every one of the Old and New World peoples knew the sling, its distribution is sufficiently wide so that no serious doubt may be entertained as to its near-universal distribution among man. Those people who did not use this implement may once have possessed it and later given it up, or they may have never found sufficient utility for it to bother with learning its manufacture and application. The sling is very widely used to hunt birds, and serves as a toy for peoples all over the wrist, and from very distant regions and New worlds, one string is looped to slip over the wrist, and from very distant regions (e.g., Balearic Islands, Arabia, Oceania, Mexico, Peru) one reads that the sling serves also as a fillet or forehead band. Doubtless some enterprising student could add to this brief list of widespread parallels, and could thereby point out even more clearly something which appears to us as quite apparent, namely that the sling is a very ancient implement which has presumably been diffused from some ultimate single source.

For our immediate purposes, we may conclude that the ancient sling from Lovelock cave, Nevada, fits comfortably within the western North American distribution of this instrument in the ethnographic period.

As far as can be determined, the Lovelock cave sling pocket (Museum No. 1-19345) exhibits a technique not previously recorded. It has certain technical similarities with the Humboldt cave specimen (Museum No. 1-43774), of which O'Neale (1947, p. 179, Fig. 35) says: "The technique is wrapped weave over a foundation of cords (paired warps) of the same diameter and formation as the wrapping element." The Lovelock cave specimen consists of a foundation of paired warps over which the weft element is continuously worked in what can only be described as a simple "knotting" procedure (Fig. 67, *b*). In appearance, the individual ties approximate the Oriental technique known as Ghiordes knot (Fig. 69).

Numerous slings, complete and framentary, have been collected from ancient Peru. O'Neale, in her study of early Nazca textiles, speaks of two different types of slings from Cahuachi. One type, usually with 7" centers (17.78 cm), consists of "two flat plaits of maguey fibers (over a core) brought to a point at each end by a wrapping of 2-ply cotton cord." (O'Neale, 1937, p. 201, Pl. 48 *a*, *c*.)

The second type, made entirely of wool yarns, shows two forms of technique involved in its construction. The sling pocket is in Kelim tapestry technique, while the sling cords are formed by what is termed wrapped weave. O'Neale states: "In the sling each warp element makes a single turn around a spiralling weft element by going down on the far side of the weft, and coming up on the near side." (P. 202, Pl. 48, *d*.) This technique is also featured in the structure of the Humboldt cave specimen, with the difference that here the weft is the binding element which proceeds in wrapped-weave technique. It is continuously worked in the same direction, from one side selvage to the opposite one, by turning the web

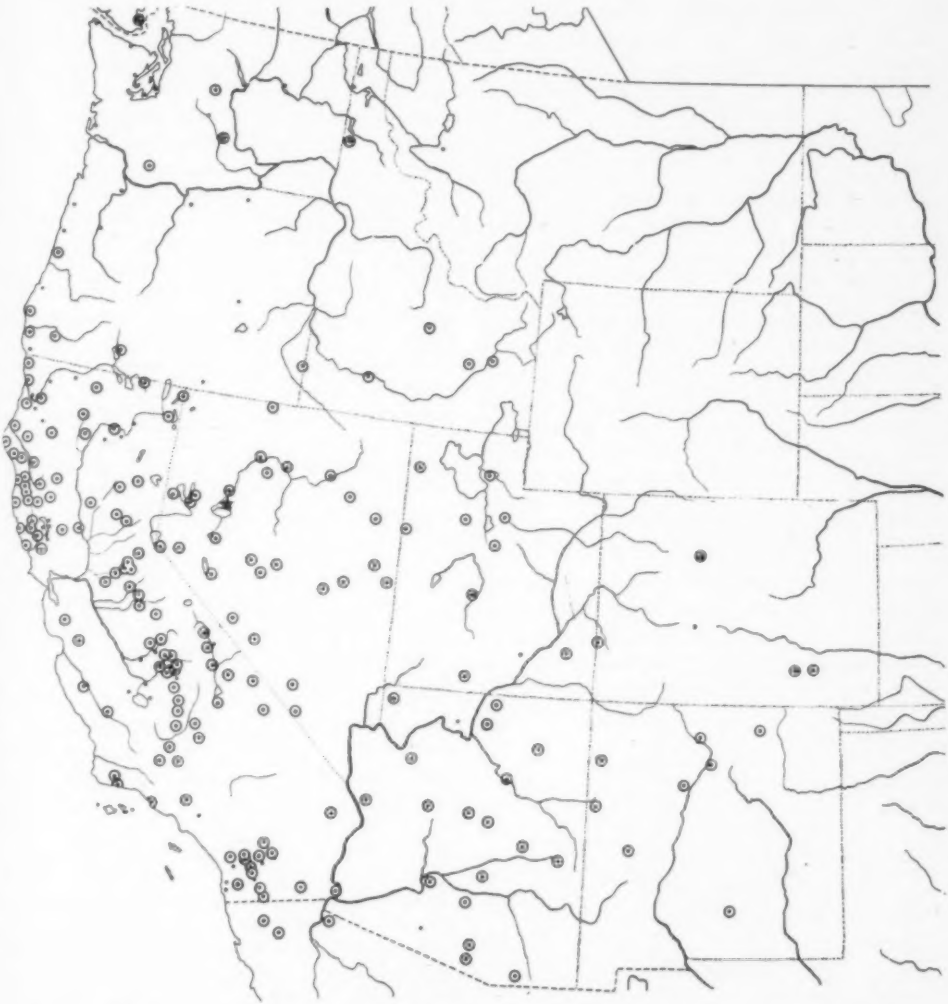

FIG. 68. Tribal groups in part of western North America claiming use or knowledge of the sling. Presence shown by nucleated circle; simple dot signifies non-occurrence or no information. All data taken from *Culture Element Distributions* series published in University of California Anthropological Records. For identification of groups see key map in Kroeber, 1939. Position of Lovelock cave shown by star.

from one face to the other. This feature, as will be seen below, is also characteristic of the Lovelock cave specimen.

Bühler-Oppenheim (1948, pp. 126-127, Fig. 50) illustrate a third type of sling pocket from ancient Peru. The specimen is ovoid in shape, measuring approximately 3 9/16" (9 cm.) by 1 9/16" (4 cm.). The total length of the sling is given as 59 1/16" (150 cm.). The yarn is composed of a "brownish bast" fiber. The center consists of a net-like mesh, the elements of which are made up of 4-strand plaits. The whole is enclosed and shaped by a heavier braid, also 4-strand. Measurements and shape, though not technique, are remarkably like the Lovelock cave sling pocket.

Dimensions: Specimen 1-19345 is ovoid in shape; its maximum length and width is 3½" (8.89 cm.) by 1½" (3.81 cm.). The rectangular, fragmentary sling pocket from Humboldt cave measures approximately 2¾" (7 cm.) by 2⅜" (6 cm.) (O'Neale, 1947). The two attached fragmentary sling cords measure 1⅞" (4.76 cm.) and 1⅜" (3.49 cm.), respectively. Their diameters range from 3/16" (0.48 cm.) to 5/16" (0.79 cm.); the thickest sections adjoin the narrowest ends of the sling pocket. The textile specimen is furthermore accompanied by two separate pieces of cord measuring from 1⅝" (4.13 cm.) to 1⅞" (4.76 cm.) in length. These fragments may be interpreted as portions of the attached sling cords.

Yarns: In all probability the fabric is made of twisted Indian Hemp fiber (*Apocynum cannabinum L.*). This bast fiber is light golden-brown in color, long and tenacious in composition, fuzzy in appearance, and has a sheen not unlike that of linen (Matthews, 1911, pp. 298, 306-7).

FIG. 69.

Primitive weavers frequently spin a quantity of yarn and use what they need for both warp and weft elements. This seems to have been the case with the Humboldt cave fabrication. An analysis of the Lovelock specimen (1-19345), however, revealed the presence of yarns which are obviously taken from different batches of prepared materials. Some of the weaving elements are composed of ply-yarns the singles of which are spun with the spiralling to the left (S-twist), others with the spiral twisted to the right (Z-twist). Both warp and weft elements consist of double-ply yarns spun to the left; the initial ply is Z-twist. The warp, however, contains unequal plies; one of the singles is smaller in diameter and more tightly spun. The weft is more evenly twisted and consists of a continuous length of strand; there is no visible occurrence of splicing or knotting to elongate this binding element. The loom-strings are compound cords formed by uniting 4 and 6 singles; the initial ply is S-twist. The winding elements, which reinforce the sling cords, are 2-ply yarns exhibiting both left- and right-twist yarns. One may deduce from this that the weaver utilized odds and ends of available twine in the construction of this sling.

The complete yarn analysis, including comparative information on the Humboldt cave piece, has been prepared in table form (Table 6).

Thread Count: The textile found in Lovelock cave has a total of 14 warps, or rather, 7 warp pairs. Two warps are placed closely together and function as single elements at the side selvages (*ba* and *nm*, Fig. 70). The remaining 10 strands are paired off (*d-c*, *f-e*, etc.) and the resulting units arranged approximately ⅛" (0.32 cm.) from each other. However, the distance between these units varies according to the width of the specimen; that is, paired warps are closer to adjacent ones the nearer they are to the apex and base of the ovoid shape.

The thread count revealed an average of 22 wefts per inch in the central portion of the fabric and 28 wefts per inch towards the upper and lower ends. The warp set-up has 8 strands (i.e., 4 warp pairs) per inch in the center and 14 strands (i.e., 7 warp pairs) at the narrower extremities. The obverse, as well as the reverse side, contains 40 rows of weft manipulation; the total number of courses is 80.

The Humboldt cave sling pocket, according to analysis of specimen 1-43774 in the University of California Museum of Anthropology, has a total of 25 warps, but O'Neale (1947) erroneously lists the total number as 50. There are 28 rows of wrapped weave in this fragmentary specimen.

Technique: The reconstruction of the technique was carried out by commencing the manipulation at the upper right end, and proceeding continuously in a right-to-left direction. The manipulation of alternate rows is as follows: The weft element, having been wound thrice around the paired selvage strands *ba*, proceeds to the adjacent warp unit *d-c*. It is then carried over warp *c*, passed under *d*, is brought up and around *d-c*, taken back under *c*, brought up between *d-c*, crossed over *d*, and hence carried to the next warp pair *f-e*. This procedure is repeated, in like manner, at the following and remaining warp units. Arriving at the left edge, the weft strand crosses over warp pair *nm*, where it circles around this unit three times (variations: 2, 4 times) before continuing on another course. At this stage, however, the fabric is turned wrong face up so that the reverse side now faces the weaver. The manipulation continues, as described above, from right to left side selvage; but selvage strands *mn* now occupy first position at the right edge of the obverse side. The same knotting technique continues over warp pairs *k-l*, *i-j*, *g-h*, *etc*. These two rows form the unit of repeat. (See Fig. 70.)

This unique procedure gives the fabric a vertically ribbed effect and a horizontal pattern of floats. It is characterized by carrying, or floating, the binding element from warp pair to warp pair and producing a knot-like fastening along each of the 5 units of stretched warps. The pattern is reversible; that is, floats are created by alternate rows of knotting technique on both sides.

In analyzing the techniques of archaeological specimens, one can only surmise the method of weaving procedures. The reconstruction of a textile technique may duplicate the exact effect of a weave, but the technician may

TABLE 6. ANALYSIS OF TWO APOCYNUM SLING POCKETS FROM NEVADA.

Specimen:	*Element:*	*Fiber:*	*No. of plies:*	*No. of singles:*	*Direction of twist: Final*	*Intermediate*	*Initial*	*Degree of twist:*	*Remarks:*
Lovelock Cave: 1-19345	Warp	Apocynum cannabinum	2-ply	2	S-twist		Z-twist	Medium hard, approx. angle 30°	One ply slightly harder in twist and smaller in diameter: approx. 1/16 in.
	Weft	"	2-ply	2	S-twist		Z-twist	Hard, approx. angle 35°-40°	Both plies same degree of twist; somewhat finer than warp
	Loomstring I	"	2-ply	4	Z-twist	Z-twist	S-twist	Cord: medium, approx. angle 20°-25° Singles: hard	Cord: diameter approx. 1/16 in.
	Loomstring II	"	3-ply	6	Z-twist	Z-twist	S-twist	Cord: medium, approx. angle 20°-25° Singles: hard	Cord: diameter approx. 3/32 in.
	Winding cord I	"	2-ply	2	Z-twist		S-twist	Cord: medium-to-hard, approx. angle 25° Singles: medium	
	Winding cord II	"	2-ply	2	S-twist		Z-twist	Cord: hard, approx. angle 35° Singles: medium	Slightly larger in diam. than weft element
	Frag. Loomstring (?) I	"	2-ply						Specimens too brittle for yarn analysis
	Frag. Loomstring (?) II	"	3-ply						
Humboldt Cave: 1-43774	Warp	"	2-ply	2	S-twist		Z-twist	Cord: hard, approx. angle 35° Singles: medium hard	Yarn analysis made of Spec. No. 1-43774 in UC Museum of Anthropology
	Weft	"	2-ply	2	S-twist		Z-twist	Cord: hard, approx. angle 35° Singles: medium hard	

never be certain that his manipulations correspond to those of the original weaver. In the case of the Lovelock cave specimen, a clue may be found in the manufacture of contemporary twined graters among the Surprise Valley Paiute. Isabel Kelly writes: "Work begins at the lower left (base) on the wrong, or convex, side, . . . At the end of the course [lower right on her sketch] she turns the specimen right face up and works from left to right across it, and so on. The turning from one face to the other means that the stitches continue to have a uniform slant on either face which they would not have if the work were continued back and forth on one face alone." (Kelly, 1932, pp. 128-9, Fig. 8.)

This method of starting at the lower left end, proceeding from left to right, and turning the specimen from one face to the other, may possibly represent a survival of ancient motor habits. If so, the manipulation of procedures described for our specimen would be in reverse order.

Side Selvages: An interesting technical feature of this specimen is the treatment of its side selvages. The weft element, upon reaching an edge, is wound spiral fashion around paired selvage strands before returning on another course. This wrapping process serves, for one thing, to strengthen the selvages.

Detailed analysis revealed the following setup: Along the central portion of the web, which exhibits the greatest width, the weft strand consistently winds around the outer edges three times. Specifically, along the right side selvage this trait occurs 27 times; along the left side selvage 25 times. Towards the apex of the sling pocket, where shaped weaving presumably commenced, the weft element is manipulated in the same manner; it introduces, however, variations of 2 and 4 spirallings. At the base of the web, a preponderance of 2 spirals occurs; the right side selvage contains 11 such instances, the left side 12.

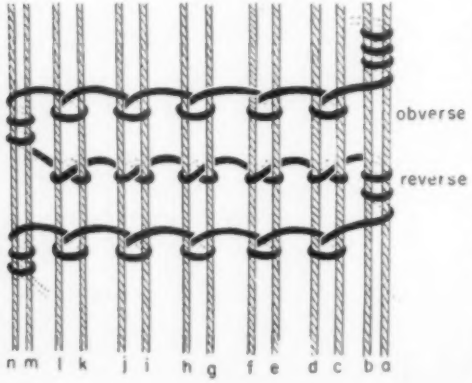

Fig. 70.

The apparent inconsistency of these occurrences is explained by the function they assume in the shaping of the ovoid piece. Due to the characteristic feature displayed by the ligature, the wrapping method forms spans between one course and the next. This spanning is an essential technical manipulation to keep the passage of the weft on a fairly horizontal course, since each row of knotting technique perforce takes up more space than a plain under-one-over-one binding method.

One might deduce from this that the closing point of the fabrication is the one where the wrapping process shows a preponderance of 2 spirals between courses. The spans become shorter as the shape is narrowed down, and the warp is no longer at right angles to its opposite binding element.

Shaping: In order to terminate the ovoid form, the weaver starts to bring certain groups of warp pairs together and treat them as a single unit. The end of the web shows that the outer pairs of warp units are brought together first, leaving 5 warp groups for the manipulation of the weft. In other words, warps *ba* and *d-c* are joined into a 4-strand unit at one outer edge, *l-k* and *nm* at the opposite selvage. A second reduction is made by joining warp pairs *h-g* with *j-i*. The remaining 4 groups of aggregate warps form part of the sling cord at the extreme end of the ovoid shape (Fig. 71). This reduction in the number of warp elements, and the tightening of floats created by the weft, aids in the gradual oval shaping of the sling pocket. Only a slight variation in the grouping of warp units takes place at the opposite, or starting point of the web; here, however, the initial 4 warp groups start to separate into smaller strands till the full series of 7 warp units is reached.

Finishing method: Analysis revealed the presence of 4 warp loops at either end of the textile specimen. These loops, composed as they are of the aggregate components of 7 warp pairs, are held by loomstrings. These

cords, in turn, are folded back on themselves and form part of the core of the sling cords (Fig. 71). Consequently, they create a slight bulge at the beginning of the cord lengths. The presence of warp loops and loomstrings indicates that there must have been some means by which the warp skein was held taut for manipulation. Thus, the upper end of the warp set-up may have been fastened to a stake, while the lower end was held taut by hand or fastened to the weaver's belt.

The doubled up loomstrings are reinforced by means of separate lengths of twine, which are tightly wound around the cores. The winding cords complete 24 spirals around each of the sling cords and are fastened off by tucking the ends under the two foregoing spirals. Graumont and Hensel (1943, Fig. 32, Pl. 2) define this type of knot as the *Round Turn Running Stopper Hitch*. Since the winding process terminates at the point where the cords are severed, the complete length of it along the sling cord is unknown. The two separate, fragmentary pieces (1-19345A) have an additional 22 and 25 spirals apiece.

Texture: The texture of the fabric is fairly open and loose in the central section of the sling pocket; where the warps are constricted near the ends, the web is more tightly bound together. This congestion of the weaving elements gives more firmness and aids in the shaping of the textile. The method of working simple ties along stretched warp units helps keep the vertical strands in fixed positions. Furthermore, it gives the sling great strength and resilience, features which make it most appropriate for the use of such a weapon. The wrapped-weave technique, as exemplified in the Humboldt cave sling pocket, manifests no such resilience.

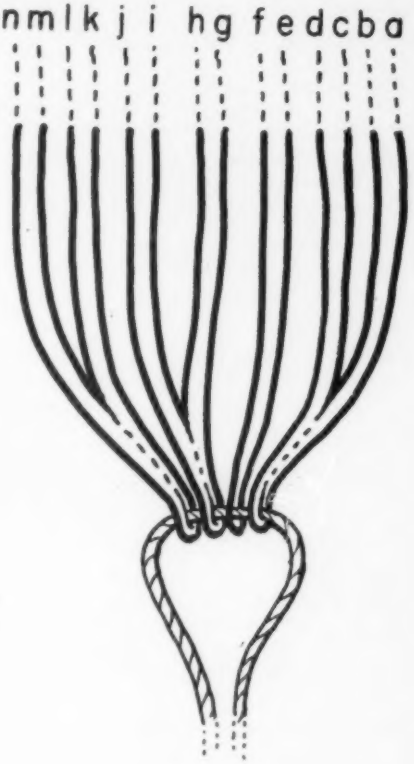

FIG. 71.

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Department of Anthropology
University of California
Berkeley
January, 1952

CALIFORNIAN FLICKER-QUILL HEADBANDS IN THE LIGHT OF AN ANCIENT COLORADO CAVE SPECIMEN

GORDON W. HEWES

FROM MANTLES CAVE, in Dinosaur National Monument, in the northwestern corner of Colorado, Burgh and Scoggin (1948) report a buckskin pouch which contained a remarkably well preserved flicker-quill headband turned up with miniver. The similarity of this ancient ceremonial headdress, apart from its fur trimming, to the ethnographic flicker-quill headbands of California, raises a challenging culture-historical problem. The evidence suggests that the similarity may rest on cultural connections and that the flicker-quill headband may be an important key for the understanding of Californian-Great Basin relationships during the first millennium of this era.

Burgh and Scoggin (1948, pp. 38-41) have described the archaeological circumstances of the Colorado find in detail. Mantles cave is one of several non-residential caves in Yampa Canyon, containing small chambers dug into the silt or sand of their floors. The culture represented in the caves and open sites has been identified in part with the Fremont culture of east-central Utah, a basically Basket-maker manifestation extending along the Green River and its tributaries, and dating from about 400 to 800 A.D. (Morss, 1931; Lister, 1951). The Mantles cave headband and other Yampa Canyon specimens are now in the Henderson Museum, University of Colorado, Boulder.

The Colorado headband merits a detailed description. Fundamentally, the technique of manufacture is the same as that employed in the making of the California specimens: the central tail feathers of the Red-shafted Flicker, *Colaptes cafer collaris,* have been trimmed of their vanes so as to leave the red-orange shaft or quill bare for about 8 cm. of the total feather length of about 12.5 cm. The remaining untrimmed 4.5 cm. of the feather at the distal end forms a roughly diamond-shaped tuft. The trimmed feathers, placed side by side, form a continuous elongated mat of quills. The Mantles cave band is 58.5 cm. long, and contains 370 or more feathers, which would have required some 60 birds. The quills are arranged so that their ventral or under-surface portions face the front of the headdress—i.e., the surface not in contact with the wearer's head. The quills are held together by two horizontal threads of sinew, which pass through perforations which pierce each quill at two points below the diamond-shaped tuft. The uppermost of these threads stops 14 cm. from the right end, and 12 cm. from the left end of the band, in terms of the wearer's right and left. The lower thread runs the whole length of the band. The quills are also anchored by the basal binding strips. Along the front edge of the band this consists of a trimming of ermine, made from the pelts of three weasels (*Mustela frenata,* probably *nevadensis*) in winter pelage, averaging 2.25 to 2.50 cm. in width. Along the back edge is a buckskin backing strip, of the same width as the ermine band, which would be in contact with the wearer's forehead. These strips hold the bases of the row of quills between them, and they are firmly united by stout sinew lashings at about 1 cm. intervals, both along the lower edge of the headdress and along the upper

margins of the ermine and buckskin strips. At each end the ermine widens out, extending nearly the width of the quill band on the rear or inner surface, around which it has been folded, and to about 7.5 cm. on the end portions of the front surface, covering the quills for about 6 cm. inward from each end.

Just to the left of the center of the band are six quills from the Yellow-shafted Flicker, *Colaptes auratus luteus*, identical to the other quills except for their color. Close inspection of the headband discloses no evidence that these yellow quills were inserted at a later time, by way of repair; they seem to have formed part of the band from its beginning. At each end of the band is a single primary wing feather, 22 cm. long, extending 11.5 cm. beyond the tips of the flicker-feather tufts. These two end-feathers match, and are almost certainly from the left and right wings of a single bird, probably a crow. The concave undersurfaces of these feathers face forward, and shafts and barbs alike are brownish-black.

Along the front of the band, at fairly even intervals, their tips reaching almost to the level of the upper horizontal thread, are eight additional flicker tail feathers, of which only the distal tufts are exposed. Their shafts, hidden behind the ermine trimming, have been shortened about 6.5 cm. Three of these are to the right of the center of the band, four to the left, with one in the center.

The manner of wearing the band is clearly indicated by the presence of two buckskin

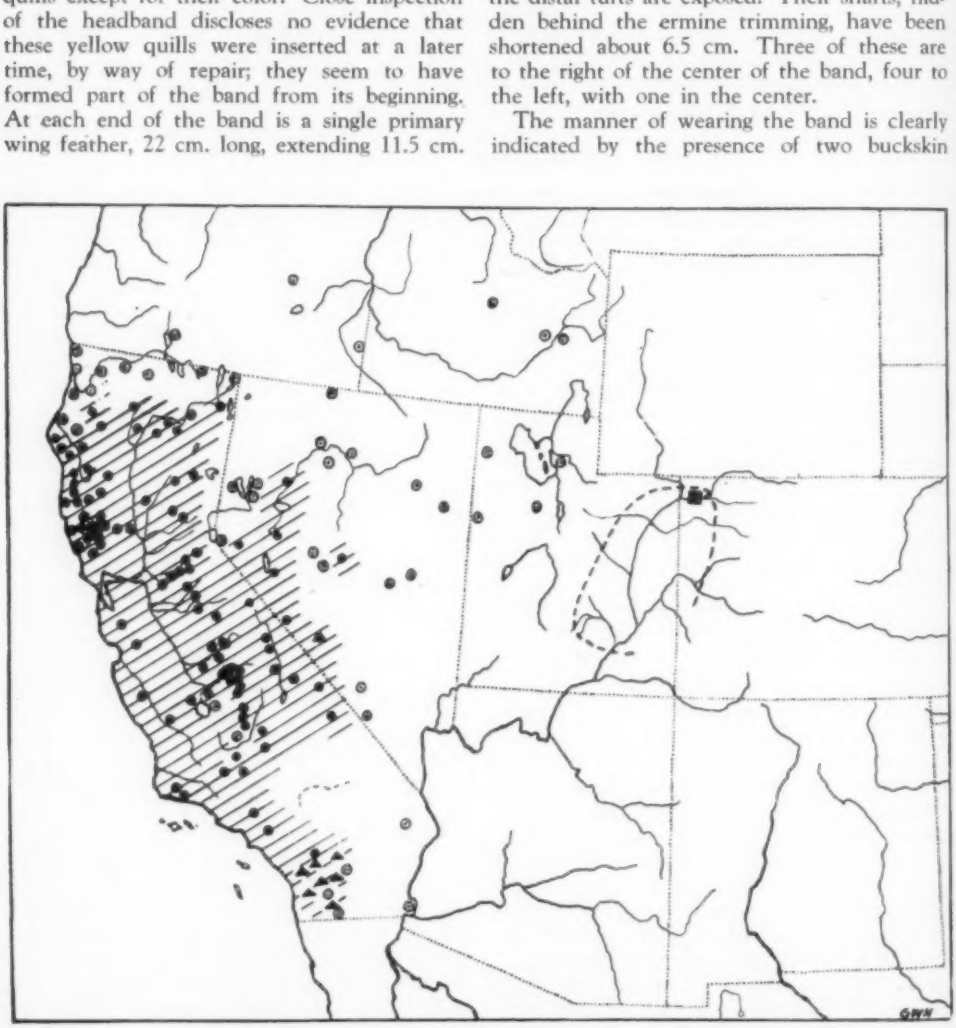

FIG. 72. Distribution of flicker-quill headbands in western North America.
See p. 149 for explanation of symbols.

thongs, about 2 mm. thick, and about 9.5 cm. long, arising from the buckskin basal strip at points 11.5 cm. in from the ends. If the band were worn snugly against the forehead and temples, these thongs would run from above each ear to be tied together at the back of the head. The ethnographic Californian specimens were held on the wearers' heads in similar fashion (Kroeber, 1925, pl. 59). The bands were not meant to encircle the head, but were worn so that the ends flapped out free at the sides.

Burgh and Scoggin (1948, p. 40) have commented on the identification of the bird species from which the quills were obtained. The flicker, also called yellowhammer in the ethnographic literature, is a very widespread and common bird of North America, belonging to the order of woodpeckers (*Pici*), divided into several closely related species distinguishable mainly on the basis of plumage colors. The Red-shafted Flicker, from which all but 6 quills were obtained, has a range extending from southeastern British Columbia eastward into the western Plains from southern Alberta to west Texas, and covering nearly all the ecologically suitable portions of the Pacific slope as far south as southern California, and in Mexico into Zacatecas and Durango. The species winters throughout most of this range, but may extend casually farther east; on the Pacific Coast, its winter range also includes northern Baja California (American Ornithological Union, 1931, p. 188; Peterson, 1941, pp. 103-4). The bird from which the yellow quills were taken, *Colaptes auratus luteus*, is distributed generally east of the Rockies, though the ranges of the eastern and western flickers overlap somewhat, so that hybrid individuals are not uncommon. The yellow-shafted species also occurs in the state of Washington. Still another yellow-shafted species, *Colaptes chrysoides mearnsi*, occurs in the sahuaro belt along the lower Colorado River and its tributaries in southeastern California and Arizona. On ornithological grounds, it is entirely reasonable to locate the place of manufacture of the Mantles cave headband in the vicinity of Yampa Canyon, Colorado. Certainly the possibility that the specimen could have been a tradepiece originating in central California is diminished by the presence in it of quills from a species distributed chiefly east of the Rockies, occasional in the mountain area, but certainly not in California.

Flicker feathers have been found often in Basketmaker sites in the greater Southwest, and were encountered by Morss in six of the Fremont River sites which formed the basis for his definition of the Fremont culture (Morss, 1931, p. 76). At site 27, for instance, Morss found a strip of buckskin which had at one end a tiny fragment of red flicker feather, bound on with sinew; a bit of white down was secured with sinew at the other. It is barely possible that a large petroglyph near Fruita, Utah, attributed to the Fremont culture, may represent an anthropomorphic figure wearing a headdress similar to the Mantles cave type (Morss, 1931, pl. 16).

Figure 72 shows the location of Mantles cave in relation to the distribution in ethnographic times of the flicker-quill headband. The dashed line surrounds the region from Yampa Canyon to the Fremont River to indicate the approximate area of the Fremont culture, 400 to 800 A.D. The solid black circles represent positive ethnographic occurrences of flicker-quill headbands, reported by native informants interviewed in the course of the University of California Culture Element Survey. The hollow circles with center dots are locations of explicit negative reports, where informants denied the use of such headbands in aboriginal times. The solid black triangles represent groups where flicker-quill bands were known, but not used as headgear in ceremonies. The Southern Californian groups thus indicated used such quill bands to decorate open-air dance enclosures, or were uncertain about their use—scarcely surprising in view of the 180 years which have passed since the beginning of Spanish mission contact. The one Nevada occurrence marked with a triangle is where such bands were worn on the chest by the dancer, rather than on the forehead. The central Californians did not limit their use of flicker-quill bands to headgear worn across the forehead, though this was the commonest fashion. Long bands of flicker-quills were worn down the back as streamers or pendants, and very short segments of quill bands were suspended from pompom-like devices to be used in dancing.

We can be fairly sure that flicker-quill headbands were not used in recent times in the Southwest, nor among the historic Ute, Southern Paiute, and Northern Shoshone. It is extremely unlikely that headbands of this type

were used by any of the historic western Plains tribes either.

Notes on the ethnographic distribution:

Plateau: whole woodpecker feathers worn in hair as shamanistic insignia on Lower Columbia R, with absences checked for middle Fraser R. and elsewhere (Ray, 1942).

Oregon Coast: wearing of headbands of whole woodpecker scalps from the Acorn or California Woodpecker, *Balanosphyra formicivora* (?), as in Northwestern California;: not to be confused with flicker-quill bands (Barnett, 1937).

Northwestern California: Yurok, Karok, Hupa, and their neighbors used ceremonial headbands of whole woodpecker scalps, glued on to buckskin bands. These were worn in the Jumping Dance, and, like the flicker-quill bands worn farther south, across the forehead, with ends flapping loose at sides. These woodpecker scalp bands were trimmed with white deer-belly fur, a trait reminiscent of the Mantles cave specimen.

The Chilula had the northwesternmost use of flicker-quill headbands in California, and, like the Mantles cave specimen (but unlike the typical Central Californian band) had the diamond-shaped tufts along the upper border of the band only (Kroeber, 1925, Fig. 20, *d*). The Chilula variant, along with some others, provides a sufficiently wide range of variability in California to accommodate, typologically speaking, the divergent features of the Mantles cave band.

The Sinkyone not only had typical flicker-quill headbands but little banner-like tablets of conjoined flicker-quills, — in essence short segments of the longer forehead bands —, hung from sticks placed in a twisted forehead fillet of fur, something like the Pomo and Miwok pompoms. That a connection exists between these bannerettes and the regular quill headbands cannot be doubted; their relatively restricted distribution suggests that they are a local specialization of the basic quill headband trait.

Northern and Northeastern California: Yurok of Weitchpec to E. Achomawi, a transitional belt for feather-work headgear, in which there are bands composed of whole flicker-feathers with tips all in the same direction, the feathers themselves being "notched" at the sides.

Central California: Pomo *Guksu* impersonator seems to have worn a flicker-quill band in former times; performance included wearer's approach to sick patients, prodding of afflicted parts with staff during dance.

Patwin valued flicker headbands highly, according to length (some were 120 cm. long); aboriginally priced in clamshell disk beads, they brought $4.00 in post-contact times (Kroeber, 1932, p. 292). Patwin used such bands in several ceremonials: Hesi-cult dancer known as *chelitu; wit'ili* character in Kuksu cycle (two long bands trailing down back) (Kroeber, 1925, pl. 77); Kuksu impersonator accompanied by two assistants wearing headbands of flicker-quills, plus down-filled head-net, occipital headdress of long magpie tail-feathers surrounded by shorter crow feathers; *lole* ceremony, connected with girl's adolescence, women dancers wore flicker-quill headbands with magpie and hawk-feather coronets. Valley Maidu and Nisenan performers in related dance cycles used similar regalia (Kroeber, 1932, pp. 327, 342, 385-8). Maidu word for flicker-quill headband: *wo'lołoka;* Patwin word, *tsiak* (from name of the bird) or *Lupi* (for shorter bands).

Artist Louis Choris of the Russian round-the-world expedition which visited Presidio and Mission of San Francisco in 1816 depicted Indians with flicker-quill headbands as well as with tablets or bannerettes of quills. His models may have been Costanoan, Coast Miwok, or even Pomo. Heizer, in his analysis of Fletcher's account of Drake's 16th Century visit to New Albion (presumably Coast Miwok territory), has suggested that the crown worn by the "king" or *Hioh* was a flicker-quill headband (Heizer, 1947, p. 268, pl. 18*a*).

Data for the Valley Miwok are unusually full with respect to the headbands, including the snaring of the flickers themselves. A hunter might snare "a basketful of birds" in a day, not all of them flickers (Barrett and Gifford, 1933, p. 185, Fig. 24). Miwok wore their bands either across forehead, two ends free, or fastened to crown of head, to pass down back as streamer. Bands were called *tama'kkili*. Miwok specimens resemble Mantles cave band in that feather tufts form solid border in contrast to Wintun, Yuki, Pomo, Chilula, and Patwin bands where tufts are spaced between tuftless quills. Miwok bands also resemble Koso and Panamint specimens in this respect, suggesting a distinction between southern and northern flicker-quill headband types in California (Barrett and Gifford, 1933, pl. lxxiii, 2-3). Significantly, Miwok bannerettes of flicker-quills used to adorn pompoms show spacing of tufts as in the northern headbands. All Miwok feather regalia were inherently sacred (Gifford, 1926, p. 405). Before donning flicker-quill headband, the wearer had to have it swung around him four times by dance-manager; all dancers were careful to keep bands from "injurious" contact with spectators. Manufacture of feather dance ornaments required special songs, food-offerings, etc. Flicker feathers in themselves not dangerous, could be stored around dwelling, but once made up into headband, became unsafe. Miwok did not dispose of such articles along with other effects of deceased, but placed them under stones in running streams. A comparable sanctity may well have invested the Mantles cave specimen, which had certainly been cached in a fashion suggesting its magical power.

Yokuts men dancers wore flicker-quill headbands. Among Bankalachi-Tübatulabal such headbands were known but rare; they were called *paiya'men*. Shamans could wear them in dance after mourning ceremony, not in ordinary curing seances. Yokuts wore bands not only horizontally across forehead, but hanging down back, and sometimes as belts or bandoliers. Use of flicker-quill bannerettes for pompoms was limited to

W. Mono and Choinimni Yokuts in S. part of Great Valley.

Costanoan, Salinan, Chumash, and Gabrielino apparently made flicker-quill headbands, resembling existing Luiseño museum specimens, — that is, with continuous, poorly trimmed tufts instead of neatly trimmed tufts and tuftless quills (Harrington, J. P., 1942, p. 17). A cave cache in Gabrielino territory is reported to have yielded a fragmentary flicker-quill band of Luiseño type (Kroeber, 1925, p. 665).

Southern California: Luiseño flicker-quill bands — *tuminut*, poorly trimmed and of "darker feathers" were used to decorate outdoor dance enclosures for *toloache* or jimsonweed initiation rites, but not worn on forehead as part of dance costume. The Mountain Cahuilla and Cupeño did the same. Serrano did employ them as veritable headbands, as well as for belts and bandoliers. Western and Desert Diegueño *toloache* initiation directors wore flicker-quill belts or bandoliers (Drucker, 1937, pp. 19, 35).

Great Basin: Koso or Panamint of Owens Valley south of the lake made flicker-quill bands like those of Luiseño and other S. Californians; existing specimens are of mediocre workmanship, with only small section of each quill stripped of vanes. Two bands neatly sewn with two sinew threads running length of each, and both about 1.5 meters long, attributed to Death Valley Shoshone, are preserved at Stovepipe Wells and Furnace Creek Inn (Steward, 1933, p. 321; Kroeber, 1925, p. 591, pl. 58).

Steward's Owens Valley Paiute informants did not clearly report flicker-quill headbands, but "a band of orange flicker feathers across the forehead hanging on each side to the knees, the head part including a row of sage hen tail feathers and behind this a row of eagle tail feathers, projecting upward like a Plains feather bonnet," (Steward, 1933, p. 321). Driver's later trait-list makes it clear that bands were made of quills, with tufts solid, not spaced at intervals; at Big Pine such bands were worn across forehead, at Independence, only as belts or bandoliers. The bands were worn in the men's "war dance," *totsohoidu*. Flicker-quill bands had a continuous distribution from Kawaiisu, Koso, Panamint of Saline V., Panamint of Death V., and Owens V. Paiute (Driver, 1937, p. 75). The traditional origin of the dance in which such headbands were worn is significant in determining the possibility of connection between their recent occurrence in the Basin and the ancient Yampa Canyon, Colorado occurrence. The Owens Valley people ascribe the dance to the south, — specifically to introduction by a visitor (presumably Tübatulabal) from the S. Fork of Kings R., west of the Sierra Nevada crest. One of Steward's informants stated that the dance had come with its feather regalia into Owens Valley in 1850. Farther north and east in the western Basin, the dance in which the headband was worn was known as the "South" or "Exhibition Dance," a performance usually put on by visitors from another locality who were paid for the affair by their hosts. Among those with the "South Dance" were the Lida Valley Shoshone, who wore the bands on their chests (see Fig. 72). The dance seems to have spread more widely into Southern Nevada Shoshone territory than the associated flicker-quill headband. The "South Dance" and quill headband occur among the N. Paiute of Smith and Mason Valleys, upper Walker R., Carson R. south of the Sink, and as far as the lower Humboldt R. valley, but significantly, not among the Washo (Steward, 1933, pp. 266, 324; Stewart, 1941, pp. 416-17). The dance and the headband reached the Owens Valley about 1850, and spread slowly, the dance reaching Carson Sink and Winnemucca about 1900. The ethnographic occurrences of the flicker-quill headband east of the Sierra Nevada thus fail to bridge the gap between central California and Yampa Canyon, Colorado, unless we choose to date the Mantles cave specimen post-1850.

The foregoing review of the ethnographic data shows that the ceremonial associations of the flicker-quill headband are not specific. In the Pomo-Patwin area, the headbands form part of the paraphernalia of the Kuksu and Hesi cults; in Southern California they are used in connection with the *toloache* initiation, and in the western Basin in what seems to be a fairly modern, social rather than religious dance. Such evidence sheds little direct light on the problem of the antiquity of the trait, but does suggest that it may have had a long history.

Here we might repeat that the differences between the archaeological specimen from Mantles cave and the various ethnographic examples do not seem to be of first-order importance.

Hypotheses concerning the interrupted distribution of flicker-quill headbands in western North America must be able to account satisfactorily for a discontinuity of over 500 miles in space, and probably of more than 1000 years in time. Fortunately, previous ethnographic theory can be brought into the problem. Klimek, working with ethnographic data available before the systematic collection of the culture element distribution lists (which he in fact stimulated) was able to extract thirteen "culture strata" from the Californian material; his statistical procedure resembled what is now called factor analysis (Klimek, 1935, p. 40, Table 3). Klimek included linguistic and anthropometric data, which, though they do not bulk large in his quantitative studies, provided a framework for the geographical and temporal placement of the "culture strata." Klimek dealt only with

groups within the modern state borders of California, but, happily for our purposes, one of the elements figuring in his analysis is the flicker-quill headband.

The thirteen "culture strata" are reduced to six broad time periods, for which Klimek (wisely) did not set specific dates. His "strata" were not all state-wide, so that more than one could be allocated to the same general epoch. The flicker-quill headband—Klimek's "yellow-hammer quill headband," belongs in stratum Z, where it accompanies splitstick dice, the bullroarer, coiled basketry, cocoon rattle, man's hair net, feather forks and darts for headdress, splitstick rattle, magnesite cylinder used for treasure, footdrum, feather rope, widow pitches head or does not wash, various Kuksu-cult items, earth-covered ceremonial house, and parent-in-law avoidance (Klimek, 1945, pp. 40, 42, 46). In passing it is worth noting that archaeology would be unlikely to yield information on most of these items, at least not in central California where there are few dry caves. The Z-stratum elements were widespread in ethnographic north-central California, San Joaquin Valley, and to some extent in southern California and the northwest. Klimek identified stratum Z with the Penutian language stock, even though the Pomo and Hokan groups, as well as the Yuki and the Kato showed a high degree of participation in its elements. He further remarked that whereas coiled basketry, the bullroarer, and parent-in-law avoidance are widespread in North America, and hence of low diagnostic value, the flicker-quill headband, cocoon rattle, feather rope, and the Kuksu Cult traits are limited to California (Klimek, 1935, p. 57).

In terms of his sequence of strata, Z, reflecting the expansion of the Penutian stock before its later differentiation, follows the *Urkultur* which Klimek identifies with the Hokan and Yuki language families. The Penutian expansion is described as a migration from outside central California which absorbed or shattered the Hokan continuity, and resulted in the conversion of the Central Valley into a Penutian province, with its constituent languages radiating from a focus in the Sacramento-San Joaquin delta in spokewise fashion. On the basis of the culture-elements he found to be closely associated with Penutian affiliation, Klimek rejected Sapir's idea of an originally northern origin for the Californian Penutians, advanced mainly to explain the occurrence of the same stock in the Columbia Basin, but for which Sapir never published detailed evidence (Hoijer, 1946, p. 16). Klimek accepts one of Kroeber's suggestions of an *eastern* origin of the Californian Penutians. While such speculation may seem wholly insubstantial, Klimek felt enough assurance from his statistical correlations to state that the immigrant Penutians "obviously already had a highly developed ceremonial life because we find among them the universality of cocoon rattle, splitstick rattle, yellowhammer [i.e. flicker] headband, and feather rope." Whether or not Kuksu elements were developed in the earliest phase of Penutian occupancy of central California, Klimek was unable to state, but he did guess that the Yokuts, who preserved the ritual elements involved in it—the cocoon rattle and flicker-quill headband—had been led to abandon specific Kuksu patterns because of later Shoshonean influences. The Shoshonean expansion into southern California, which reached the coast and offshore islands, falls into Klimek's Period III, his stratum C_2, and is attributed "to some sort of tension on the peripheral zone of Mexican civilization" (Klimek, 1935, pp. 65-66).

It is regrettable that these brilliant hypotheses have never received adequate evaluation; Klimek greatly stimulated interest in statistical approaches to ethnographic data while his tantalizing historical reconstructions were ignored.

Lacking any comparably detailed reconstruction of Californian pre-history, we may follow Klimek's lead at least so far as tentative acceptance of his suggestion that the flicker-quill headband is extremely ancient. Against this background we must devise one or more conceptual schemes into which the puzzling Colorado archaeological specimen can be fitted with the least revision of existing hypotheses concerning Great Basin and Southwestern culture history.

If it is permissible to assume that linguistic continuities imply original cultural connections beyond the sharing of purely linguistic features, we may go further with Klimek's speculations. Klimek related stratum Z to the Penutian stock. Now Sapir, another formulator of broad hypotheses, postulated a Macro-Penutian language phylum, which, since it includes Uto-Aztekan, provides us with a continuous belt

of related languages stretching from California to the Rio Grande drainage. If we may attribute to these hypothetical ancient Macro-Penutians the "highly developed ceremonial life" which Klimek has credited to their early central Californian representatives, we have the cultural bridge which might have linked Mantles cave, Colorado, to the Central Valley of California. It must be emphasized that we deal here not with evidence, but with tenuous hypotheses to fill an historical vacuum.

The question, "Why, then, have the recent Basin groups not preserved the flicker-quill headband as have the Central Californians?" might be answered with Steward's theory that recent Basin Shoshonean culture does not represent cultural fossil, a survival from an ancient Uto-Aztekan sub-stratum, as some have claimed (Steward, 1940, pp. 476-479). The Basketmaker culture of the dry cave deposits of the eastern Basin and the Southwest deviates more from recent Shoshonean culture than from the ethnographic cultures of central California, at least in some particulars. The Basin Shoshoneans expanded eastward and northward, absorbing or replacing not only the people of the Promontory culture of the Salt Lake Basin, but the Pueboid cultures of the Northern Periphery, in relatively late times. Still more recently the Ute surged eastward into areas formerly held by the Fremont people and their successors (Stewart, 1942, p. 237).

These speculations are offered in support of the notion that an old cultural continuum may have extended from central California to the Green River drainage, which contained a ceremonial complex made up in part of elements assigned by Klimek to his Californian stratum Z. Among possible factors which may have been involved in the ultimate rupture of this continuum and the disappearance of most of its elements east of the Sierras may have been the eastward and northward spread of the Shoshoneans, beginning at some time more than a thousand years ago; the oceanward expansion of the Shoshoneans into southern California took place still earlier. That these date-guesses are very modest can be seen by the radiocarbon datings of archaeological materials from the Basin recently summarized by Heizer (1951, pp. 23-25).

Instead of the foregoing house of cards, some may prefer the simple suggestion that the Mantles cave flicker-quill headband is a trade piece, indicative of sporadic contacts across the Basin from central California, 1000 or more years ago. Certain objections to this explanation have been mentioned above. On the other hand, stimulus diffusion could have accounted for the Colorado occurrence. This would presuppose nothing more than the transmission of the general idea of a flicker-quill headband, plus a few specific pointers on how to join the quills, and how to fasten the completed band to the wearer's head. One might conceive of a round trip journey of some people from the Fremont culture area across the Basin to the Californian flicker-quill headband area, who, upon their return, made some flashy headbands of their own, on the basis of what they could recall of the western trait.

Finally, some might prefer to account for the Mantles cave headband by independent invention. Militating against this notion are the several specific technical features unlikely to have arisen spontaneously from the nature of the materials used. Admittedly, were we faced with the problem of the relationship between two equally similar headdresses from two widely separated continents, such as Australia and North America, we might be a little more willing to entertain the idea of independent invention.

If a cultural connection of some kind is admitted between the ethnographic Californian headbands and the Mantles cave archaeological specimen, we may at least claim to have established a minimal dating for the appearance of this trait in central California. Of course, such a conclusion would be unwarranted if the dating of the Colorado specimen is incorrect, or if we prefer to consider the Colorado specimen as a prototype from which the Californian trait can be derived. The latter *caveat* is contradicted by every canon of the distributional method in ethnology and archaeology, according to which the center of gravity for the flicker-quill headband trait must lie in central California.

The dependence of our speculations on Klimek's constructs has not been a matter of preference for airy speculation, but has been forced by the lack of any other syntheses of western North American culture history sufficiently detailed to include the object on which we have focused attention.

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UC-PAAE	*University of California, Publications in American Archaeology and Ethnology*, Berkeley.
SAA	*Society for American Archaeology.*
BAE-B	*Bureau of American Ethnology, Bulletin*, Washington, D.C.
Peabody Mus. AAE	*Peabody Museum, Papers in American Archaeology and Ethnology*, Cambridge.
SI-MC	*Smithsonian Institutions, Miscellaneous Collections*, Washington, D.C.

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Department of Social Science,
Anthropology,
University of Colorado,
Boulder, Colorado
March, 1952

CHARLES REUBEN KEYES

CHARLES REUBEN KEYES died on July 23, 1951 at his home in Mt. Vernon, Iowa, only three months after his eightieth birthday. For 30 years professor of German language and literature at Cornell College (Iowa), Dr. Keyes received his higher education at Cornell College, Harvard, and at the Universities of Munich and Berlin.

As a local Mt. Vernon boy of fourteen, he started to search for Indian relics in the rock shelters near the Cedar River. Although he gained a knowledge of the archeology of Iowa which surpassed that of all others, he never considered himself to be more than an amateur student. In many conversations, when asked when he would publish his work, he expressed an incompetence to make a thorough study. And yet his attic laboratory was filled with the fruits of twenty-nine years of diligent research as Director of the Iowa Archeological Survey. Dr. Keyes' modest publications give only a clue to the magnitude of this study. He felt that whether he published the results of his work or not was of little consequence. What was important was that the knowledge that he had gained must be accurately and adequately recorded. Each site he investigated was meticulously located and numbered on county and township maps. Each artifact he collected or received for the Survey was carefully catalogued and fully described. These records remain the property of the State Historical Society of Iowa and will afford a firm basis for future archeological work in the Iowa area.

His interests were catholic, for he was widely known as a competent ornithologist and geologist, in addition to his standing as an archeologist and teacher. A gentle person, he was a born teacher, and his warm interest in people won him the affection of all who knew him — a true example of a gentleman and a scholar.

—CHARLES E. GILLETTE

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FACTS AND COMMENTS

HERNANDO DE SOTO'S ROUTE THROUGH ARKANSAS

As a means of celebrating the four hundredth anniversary of the great Spanish expedition through our southern states led by Hernando de Soto and Luis de Moscoso in the years 1539-1543 a Commission was created in 1935 by act of Congress. The members of that Commission were appointed by President Roosevelt and included the writer who was made chairman by vote of the others. This Commission was authorized "to make a thorough study of the subject of De Soto's expedition" and report back to Congress "its recommendations for a suitable and appropriate celebration of the four hundredth anniversary of said expedition." The latter part of the instructions being entirely outside of my experience or training, I devoted myself, along with certain of my fellow members, to a study of the career of De Soto, and particularly of the route pursued by his army, so as to determine what communities would be interested in the proposed celebration. This study was carried on for several years and its results incorporated into a "Final Report of the United States De Soto Expedition Commission" which was printed in 1939 by the Government Printing Office, as House Document Number 7.

The official side of this commitment I did not altogether fancy, especially as it involved determinations very difficult to put upon an absolute basis and particularly the placing of markers here and there about which some doubt would almost inevitably attach. We did the best we could, however, under the limitations, and in this I was ably assisted by the vice chairman of the Commission, Col. John R. Fordyce, a resident of Arkansas, who had devoted very close attention to the possible route of the famous explorer through his State and those immediately adjoining. When the final report appeared his contribution was used almost exclusively in that part covering Arkansas though it of course passed under my own eyes. It is a matter of profound regret on my part that he is no longer alive to answer a recent attack upon our mutual conclusions.

In the light of subsequent events I could almost have wished any other assignment, for the great Spaniard and his army have so impressed themselves upon the minds and imaginations of local and general historians—not to mention politicians—that a wealth of belief verging on myth has collected about them, and earlier supposed determinations of sites have been accepted as final. The interest excited in the minds of numbers of individuals has involved of course some cranks but as well some very capable and discerning local students besides a number of highly competent and well trained investigators outside of the section interested. While our report, I feel justified in saying, was carefully and conscientiously prepared, it was necessarily limited in certain directions and particularly on the line of archaeological study, thorough work of that kind in the area under consideration being little above its infancy in spite of some excellent pioneering. This type of investigation we always encouraged to the best of our ability and we believed that it would result in proving the correctness of our main conclusions arrived at from studies of the original texts and the topography of the areas the Spaniards traversed.

One such study has just appeared—the one incidentally mentioned above—in connection with a larger work entitled "An Archaeological Survey in the Lower Mississippi Alluvial Valley, 1940-1947." *Papers of the Peabody Museum of American Archaeology and Ethnology, Harvard University*, Vol. 25. This is a very comprehensive and well illustrated work of 472 pages and many plates, by three highly trained and experienced archaeologists, Philip Phillips, James A. Ford, and James B. Griffin. Besides studies of mounds and cultural horizons, the authors have included a section on "Identification of Sites from Documentary Sources," and part of this, pages 348-91, is devoted to the De Soto route, having in mind particularly the Report of the Commission. Instead of the confirmation of our conclusions, however, as we had hoped would be the result of this type of work, the archaeologists have decided very positively against us.

Before taking up their findings I must explain that there are three principal theories regarding the place where De Soto came upon and crossed the Mississippi River, a matter which is of cardinal importance in the present discussion: (1) that accepted by the Commission which would place it at or close to Sunflower Landing, a few miles below the present Helena, Arkansas, (2) at or near Commerce Landing, as T. H. Lewis, who propounded the theory, has it, "either at Council Bend or Walnut Bend, in Tunica County, Mississippi," a theory ably supported by Dr. Dunbar Rowland, former State Historian of Mississippi, and (3) at the Lower Chickasaw Bluff where now is Memphis, Tennessee. The four narratives of the expedition are (1) that of Rodrigo Ranjel, De Soto's secretary, (2) that of Luis Hernandez de Biedma, who had charge of the King's interests, (3) that of the anonymous Gentleman of Elvas, who belonged to a Portuguese contingent, and (4) that of Garcilaso de la Vega, the longest, most romantic and least reliable of the narratives but one not to be ignored. In what follows the word "Province" will be used for the several tribes as it is in the above documents.

The findings of the three archaeologists may now be epitomized as follows: Because of material discovered by Jennings on the Lee County sites of the old Chickasaw towns, they believe that De Soto may have set out from them on the journey which brought him to the Mississippi and they add to this references by the chroniclers Biedma and Garcilaso which, so far as they go, would lead us to suppose that the Spaniards directed their course more to the north than a trail to Sunflower Landing would call for. About Sunflower Landing, Mississippi, they found plenty of sites that might be

identified chronologically with those the Spaniards visited but complain that they are too numerous, that the army should have encountered villages earlier than it did, and that, while delayed in building boats in which to cross the Mississippi, they should have heard of populations at certain sites only twenty miles away believed to have been occupied then.

On the west side of the great river, however, where the Province of Aquixo is supposed to have been located, there are no remains suggestive of a province of the size and importance they think the narratives indicate.

On the supposed site of the Casqui towns on Crowley's Ridge there are very few vestiges of Indian occupancy and none at all from the chronological period called for; in fact, they conclude, there is no support whatever for the Commission theory that Casqui was located there.

Passing to the territory thought to have been occupied by the Pacaha Province, between the lower St. Francis and the Mississippi, very few Indian sites were found and only two, rather well toward the north, that might have belonged to the Pacaha Province. None of these suggest a community of the size and importance attributed to Pacaha in the De Soto chronicles.

In tracing De Soto's route to the south after he left the Province of Casqui the Commission believed it most likely that the Spaniards crossed White River at St. Charles and suggested that the Indian site there might be remains of the town they found, but according to the researches of the archaeologists its date is much too early while, on the other hand, the Indian settlement represented by the sites at Menard and Wallace is, they think, too late to be identified with Quiguate — largest town visited by the Spaniards according to three of the narratives of the expedition.

At no point on the assumed line of march, they conclude, are the archaeological findings such as one would expect to encounter. But in particular the investigators hold that the Commission's theory is practically destroyed by the almost complete absence of remains of a considerable population on Crowley's Ridge. They say:

> It is impossible to escape the conclusion that neither documentary nor archaeological evidence supports Swanton's hypothetical location of Casqui. We have already pointed out the importance of this location to the Sunflower Landing theory, and we are going to see how crucial it is to further interpretation of the route. It is not too much to say that failure at this point makes an open question of every determination between Chicaca and Quiguate and beyond (p. 378).

And they conclude their study as follows:

> Logical interpretation of the documentary evidence unsupported by archaeology has been used by the DeSoto Commission to show that the crossing must have taken place below the mouth of the St. Francis River. We have examined that reasoning insofar as it applies to locations within the Survey Area and checked it against available archaeological data with negative results. That portion of the reasoning that depends on determinations outside of the Survey Area we are unable to dispute. The doubts encountered in the one part, however, are sufficient to raise doubts about the other, and to suggest that the Commission's reconstruction of the trans-Mississippi portion of the De Soto route, at least as far as the province of Anilco, must be regarded as unproved hypothesis that deserves at least as much consideration (p. 391).

A first reading of the report on this territory would, indeed, convey the impression that the conclusions of these painstaking archaeologists must be accepted and that the Commission was led seriously astray. They will undoubtedly be widely endorsed by advocates of the more northerly routes proposed, by way of Commerce Landing and Memphis. However contrary to the frame of beliefs I had constructed in regard to the Arkansas area, I would not hesitate to shelve it, unpalatable as that might be, except that I believe the archaeologists themselves have been led "seriously astray" by failure to observe that the areas in which archaeological remains having any bearing on the De Soto expedition can be looked for are inescapably curtailed by the narratives of the expedition and the topography of the country traversed. Our critics seem to assume that the narratives define distances and times so loosely that there is little certainty and that archaeologists may reroute the expedition to agree with sites they hold, on independent grounds, to have been occupied in 1541 when the Spaniards passed through. If it were not for the preservation of the Ranjel narrative, there would be reasons for such belief, but, thanks to this story of the expedition, we know about where De Soto was on every day of his expedition until that narrative comes to an end, and it holds out until the spring of 1542 when the Spaniards were on the point of leaving the territory of what is now Arkansas.

Of course, even this narrative does not enable us to fix every site on a transit and steel-tape basis, but, having a pretty clear idea of the time consumed by De Soto's army in a day's journey, we are enabled to assert some things with positiveness which limit beyond reasonable doubt the area in which such-and-such remains may be looked for.

In particular, the great rivers of Arkansas can be identified with rivers mentioned in the narratives beyond reasonable doubt — unless all evidence is worthless. It happens, rather unfortunately, that the last of the rivers to which the Spaniards came in this State, the River of Cayas or Anilco, is the one that may be definitely tied down, and because it happened to lie somewhat beyond the area our critics were investigating, they adopted the erroneous conclusion that they could postpone consideration of it until a new area was studied. Thus, on the evidence resulting from their researches from the St. Francis to the Arkansas, where they failed to find remains such as they thought should have been there, they reject the Commission's theory regarding De Soto's route through Arkansas and toy with others including particularly that of T. H. Lewis which involves the assumption that the three western branches of the Mississippi mentioned in the De Soto chronicles above Red River were the St. Francis, the White, and the Arkansas. That was, indeed, a favorite identification with the older writers. They were apparently intrigued by the abundance of aboriginal remains in the St. Francis region,

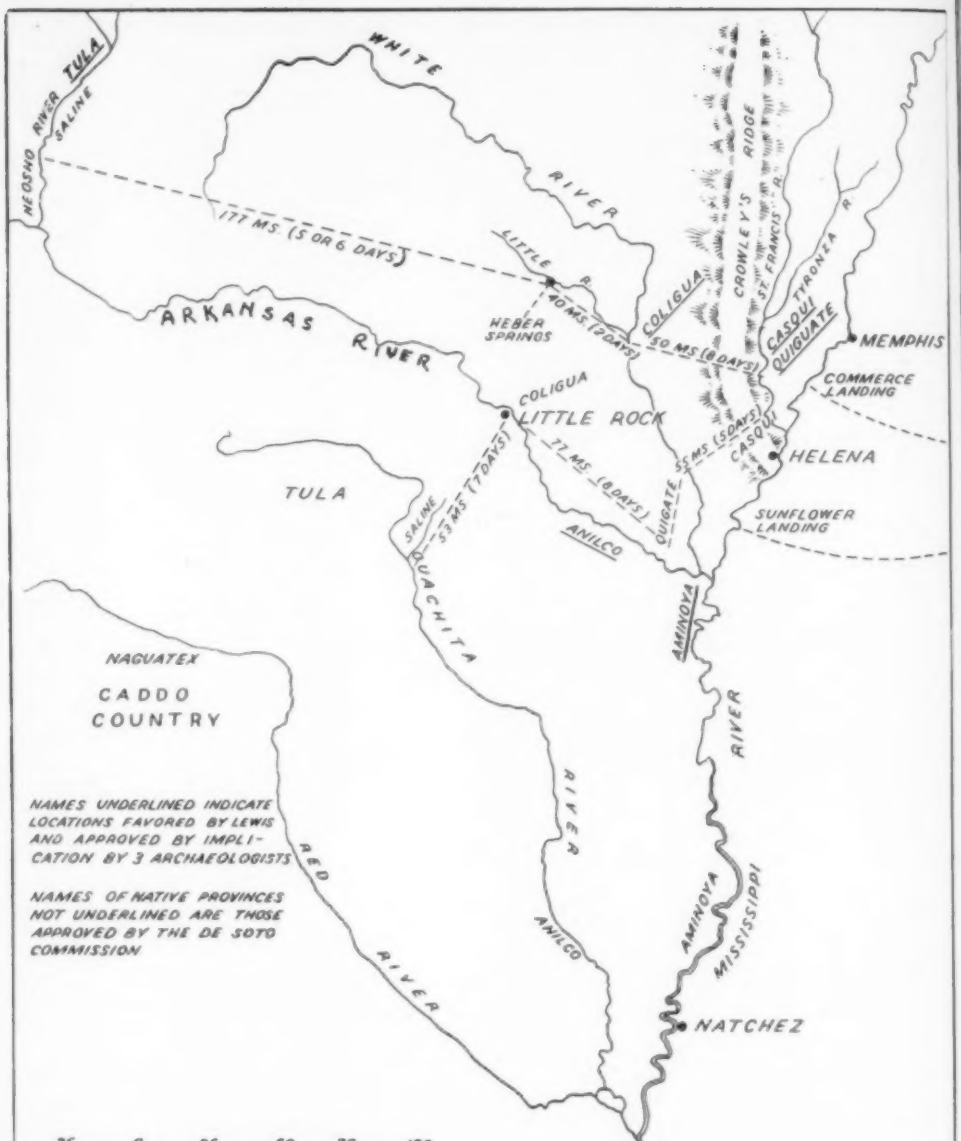
WHITE RIVER
NEOSHO RIVER
TULA
SALINE
177 MS (5 OR 6 DAYS)
LITTLE R.
HEBER SPRINGS
ARKANSAS RIVER
90 MS (2 DAYS)
COLIGUA
CROWLEY'S RIDGE
ST. FRANCIS R.
TYRONZA R.
CASQUI
QUIGUATE
MEMPHIS
COMMERCE LANDING
COLIGUA
LITTLE ROCK
77 MS (8 DAYS)
55 MS (5 DAYS)
CASQUI
HELENA
TULA
SALINE
53 MS (7 DAYS)
QUIGUATE
ANILCO
SUNFLOWER LANDING
OUACHITA
AMINOYA
NAGUATEX
CADDO COUNTRY
NAMES UNDERLINED INDICATE LOCATIONS FAVORED BY LEWIS AND APPROVED BY IMPLICATION BY 3 ARCHAEOLOGISTS
NAMES OF NATIVE PROVINCES NOT UNDERLINED ARE THOSE APPROVED BY THE DE SOTO COMMISSION
RED RIVER
RIVER
ANILCO
AMINOYA
MISSISSIPPI RIVER
NATCHEZ
25 0 25 50 75 100
SCALE IN MILES

FIG. 73.

and by the fact that Memphis was the terminus on the Mississippi of the most used trail to the Chickasaw Nation. This led them rather naturally to the identifications just mentioned and they supposed that the survivors of De Soto's expedition built their boats near the mouth of the Arkansas, dropped down to the Gulf from there, and then coasted to Panuco in Mexico.

In taking the ground that the Commission's study of the Arkansas rivers could be put off until later and its conclusions as to the route followed from the Chickasaw towns to the Arkansas could be evaluated without reference to the problem of the rivers, our critics, I shall show, committed a cardinal blunder. It seems to me that they would have known better had they given the Report serious study because we devoted something like nine pages to proof that the River of Cayas or Anilco was not the Arkansas but the Ouachita. There follows from this, first the identification of the River of Coligua with Arkansas River and the River of Casqui with White River, and after that the locations of points as far back as the Chickasaw country. Those river identifications *strictly limit* the archaeological sites that can have any value in the present discussion. It cannot be supposed for a minute that rivers as important as the White and Arkansas can have been passed without mention, and if the Ouachita was the River of Anilco then the identifications of the others are beyond doubt.

Having in our Report proved the identity of the River of Anilco with the Ouachita — and I use the word *proved* with all that it implies — I do not feel called upon to do the same all over again in an article as short as this. However, I will recapitulate.

1. At or near the headwaters of the River of Anilco the Spaniards came upon a province where they spent some time boiling out salt. Now, the great salt area of Arkansas is in the southwestern part of the State, and on one affluent of the Ouachita which I visited potsherds were scattered everywhere. There is no comparable area on the Arkansas which the Spaniards could have reached. Lewis tried, indeed, to bring into the picture a saline on the Neosho. He assumes that the Spaniards set out from a town on the St. Francis, identified by him as Quiguate, crossed White River below the mouth of Little River, came to a "salt spring" near the present Heber Springs, and then went on to the Neosho which they later confused with the Arkansas, reaching it just below the saline mentioned. This "salt spring" would be at Ranjel's Calpista, and that would do well enough, but Ranjel also says that De Soto reached the River of Anilco near a place called Tutilcoya, five or six days after leaving Calpista, and that would have meant that the Spaniards marched about thirty miles every day. The Spaniards of this army never did it. It must be remembered that besides infantry there were Indians on foot laden with baggage and plunder and much other material that could not have been moved rapidly. The cavalry itself would sometimes cover twenty or twenty-five miles per day but we are here speaking of the army as a whole.

2. Above the Salt Province, on or near the River of Anilco, was a tribe called Tula, and later on when De Soto's successor Moscoso undertook to go overland to Mexico, he came to a province called Naguatex, a Caddo name, and afterward to others in the near neighborhood which were all plainly Caddo. When the Spaniards were in the Province of Naguatex, moreover, Elvas writes that Tula was not far to the east. If the Spaniards were then in any of those Caddo towns near the bend of Red River, and Tula was where the Commission believes it to have been, on or near Caddo Creek in southwestern Arkansas, that could be true, but it could not be true if Tula was on the Neosho unless we suppose that the Caddo Indians were all living in Oklahoma at that time, and that would throw any attempt to place Moscoso's line of march entirely out of any reasonable location and is not to be thought of.

3. The Province of Anilco was on the lower course of the River of Anilco, above its mouth but not far from the Mississippi. While the Spaniards were in that province they had occasion to march by land from Anilco across to the Mississippi. If Anilco had been on the lower course of the Arkansas, since the towns to which they marched were above the mouth of the River of Anilco, in crossing to the Mississippi they would have had to walk straight across White River, the deepest branch of the Mississippi in this entire region. That would be of course absurd. Lewis avoids this by placing the Mississippi towns in question below the mouth of the River of Anilco, but that is contrary to the documents.

4. When the Spaniards were at a place called Guachoya on the Mississippi at about the latitude of Anilco they were told of an important province called Quigualtam three leagues (about 8 miles) below on the east side but were informed there were no great provinces but instead a very scanty population below on either side of the river (see Elvas in Bourne I, 153, 164-5), and when they floated down to the Gulf in 1543 they found this to be true. If the Arkansas was the River of Anilco we would have to suppose that there were no important towns and only a scanty population from the mouth of the Arkansas to the Gulf, and none on Natchez bluff. Are archaeologists prepared for that?

The accompanying map (Fig. 73), will make these points clearer.

In this Figure note: (1) the "saline" on the Neosho and the "saline" on the Ouachita and the distance of each from the River of Coligua as assumed by Lewis and by the Commission along with the number of days taken to reach them; (2) the relative positions of "Tula" according to the two theories; (3) the relative positions of "Anilco" with reference to the same two theories, their relations with reference to the Mississippi, Ouachita, Arkansas, and White; and (4) the relative positions of "Aminoya," the town from which the remnants of De Soto's army started to descend the Mississippi. Note also the relative positions of the Provinces of Cas-

qui and Quiguate according to Lewis and the Commission, and how improbably crowded the Lewis sites are. Note how the Commission theory of De Soto's route checks with the documents and the topography just as soon as the River of Coligua is identified with the Arkansas and the River of Casqui with the White. Now as to the location of the Province of Casqui. Ranjel informs us that it took the army only two days to reach the River of Casqui (White River) from the head town of the province, and, remembering that the Province of Casqui was not far from the Mississippi, we find that a good two days' journey, about thirty miles, would carry us back to Crowley's Ridge. It was this backward reckoning, not Elvas' notation that the land of Casqui was "higher, drier, and more level than any other along the river [Mississippi] that had been seen until then" that made us place the Casqui towns on Crowley's Ridge.

How then do we explain the failure to find any archaeological remains on the Ridge that would suggest towns of the size expected?

In the first place I believe it an illusion to suppose that there must invariably be an identifiable town site at every point where early explorers report towns. Indian populations, even in the "semi-civilized" Southeast, were not so tied down to locations or so deeply engaged in manufacturing potsherds for archaeologists to exhume. It would be convenient if that were the case, but I don't believe it is. For instance, there can be no reasonable doubt that the Indian town of Mabila where De Soto had such a terrific battle was in the present Clarke County, Alabama, but Mr. J. Y. Brame of Montgomery, a very careful and thorough local student of the region, has gone over the territory in question, almost "with a fine tooth comb," and up to the present time not a trace has been found of any site that can be identified satisfactorily with Mabila. It must be remembered that the expedition of De Soto took place four hundred years ago, that it was in our southeastern states only about four years, in the Province of Aquixo about 3 days, in that of Casqui altogether about 7 days, in that of Pacaha about 30 days, and in Quiguate 21 days, only 61 days in the controversial areas from Aquixo round to Quiguate. From information gathered within that limited period we derive our knowledge of the nature and distribution of the population in question, the number of tribes, their mutual relationships, and everything else about them. From this snapshot, as reflected in the writings of four relatively unlearned men, we must form our opinion of the situation along this section of the Mississippi Valley in 1541 and yet, a few years before or a few years later, it might have been entirely other.

But while failure of archaeological remains is not to me absolute proof of failure of human occupancy during a limited period, and I believe that the lower end of Crowley's Ridge was in the territory of the Casqui Indians, there is some evidence that a rearrangement of the town locations may be called for which would satisfy the archaeological conscience and to which I am favorably inclined. It happens that three of the four authorities on which we have to depend for our knowledge of the De Soto expedition do not speak of the Casqui towns as on any watercourse except for the one on the River of Casqui and we know that they were not on the Mississippi. Because of the words of Elvas above quoted and the few days taken in crossing from the main Casqui town to White River, the members of the Commission were led, very naturally I think, to place those towns upon the Ridge, or rather the flat land close to it. However, it happens that Garcilaso, ordinarily the least reliable of our sources, does place the Casqui towns, two in particular, upon a watercourse of some kind, and he also indicates that in the main town there was a mound of considerable size. This is mentioned but not much more than mentioned by our other authorities and we felt inclined to think that Garcilaso had indulged in an exaggeration such as was not unusual with him. Mention of this watercourse perplexed us, however, and we endeavored to reconcile it in some way with one of the creeks on the south flank of the Ridge. But it is possible that Garcilaso deserves more credit in this place than we would ordinarily give him. We are perhaps to think that instead of being on the Ridge, although temporary villages may well have been there, the main towns were on the alluvial land just to the east of it where the St. Francis now flows. This possibility is suggested by the words Garcilaso uses in describing the approach of the Spaniards to the first Casqui town. The following translation has been supplied to me by Dr. Charmion Shelby who translated Garcilaso's work for the Commission and is now revising her translation for later publication by the Hakluyt Society. (The translation printed by the Texas University Press is substantially the same.)

> The Spaniards crossed the [Mississippi] river without opposition, in their pirogues and in some canoes which they had won from the enemy by their diligent efforts. Dismantling the boats in order to keep the nails, which were very necessary to them, they proceeded on their journey, and having made four daily marches through uninhabited country, on the fifth day they sighted from some high hills a town with four hundred houses situated on the banks of a river larger than the Guadalquivir at Córdova. All along the margins of that river and in its vicinity there were many fields of maize or Indian corn and great numbers of fruit trees, which showed the country to be very fertile. . .
>
> This town and its whole province and the curaca [chief], its lord, had the same name, which was Casquin. The Spaniards rested there six days because of the plentiful supply of food available for the purpose and in order to attend to the sick and also to the horses. At the end of that time they went in two more days to the town where the *cacique* Casquin resided, which was seven leagues up the river on the same side. All the land was very fertile and well populated, though the towns were small, with fifteen, twenty, thirty or forty houses. The *cacique*, accompanied by many nobles, came out to receive the governor and offered him his friendship and service and his own house in which to lodge, this being on a high artificial mound, on one side of the town, where there were twelve or thirteen large houses in which the *curaca* had all his household, consisting of wives and numerous servants. (La Florida del Inca, Book 4, Ch. 5, pp. 178-179 [1723 ed.])

This is more in keeping with what we should expect on the flood plain of the Mississippi than on Crowley's Ridge, and may contain facts not mentioned by the other

writers. It must be corrected in some respects, however, by what they tell us. In the first place we note that Garcilaso has omitted any reference to the Province of Aquixo but speaks as if, after crossing the Mississippi, the army had plunged immediately into uninhabited country and had marched through it for four days, coming on the fifth to a considerable town. If we include the time taken in passing through the Province of Aquixo, with a rest of one day there, Ranjel also gives us five days, June 19 to June 23. We may suppose that the first village Garcilaso mentions which "on the fifth day they sighted from some high hills" was a village reached on the 23, but it is curious that none of the others speaks of such a town, and instead of a march of two days from this supposed first town to the Capital Ranjel allows but one and he is incidentally supported by Elvas since Elvas says that they marched for two days through the Province of Casqui before "coming to the town where the cacique was," and nothing is said of distances. We must therefore, I think, cut down considerably the "seven leagues" Garcilaso gives.

An important point is the mention of a mound in the Casqui Capital on which there were houses for this mound is noted also by Ranjel and Biedma, and the latter says:

> As it is the custom of the Caciques to have near their houses a high hill, made by hand, some having the houses placed thereon, we set up the cross on the summit of a mount, and we all went on bended knees, with great humility, to kiss the foot of that cross. (Bourne, II, 28)

He does not say of this town specifically that houses were upon the mound, and neither Ranjel nor Elvas suggests it, but yet Biedma's words tend to support Garcilaso here.

Very important for our discussion is Garcilaso's mention of "high hills" from which the first town was sighted. However this is to be interpreted, it has always remained in my thought as possibly containing a remembrance of the northeast edge of Crowley's Ridge which is very striking and nothing other than Crowley's Ridge would suggest "high hills" along this part of the Mississippi Valley. It is possible then that the Commission placed the main Casqui towns somewhat too far south and on the Ridge while as a matter of fact the capital town at least lay beyond it with perhaps another, that spoken of by Garcilaso first; and that Garcilaso has preserved two facts curiously omitted by our other authorities, first that some towns lay beyond the Ridge and second that they were along a watercourse. Failure of Ranjel, Elvas, and Biedma to mention such a stream convinces me that it was not the St. Francis but some smaller river, perhaps the l'Anguille which may have occupied the St. Francis' later bed. In comparing it to the Guadalquivir Garcilaso may have mixed in a memory of that other river likened to the same stream by Ranjel. If, however, this explanation is correct, and I am by no means unfriendly to the idea, the days' journeys given us by Ranjel will not allow us to carry the Casqui Province as far north as Garcilaso indicates but we may be able to extend it to the Greer, Grant, and Starkley mounds, the first mentioned being possibly on the site of the Casqui capital. This seems to stretch rather far the length of the days' travel mentioned above but not to an impossible degree if we remember that this may be cavalry reckoning.

If that identification should be correct then the site of the Pacaha Province might be carried higher on the Mississippi, perhaps to the Belle Meade group. Such a readjustment appeals to me as likely and it is one of those corrections of our work the probability and desirability of which I have never denied. At the same time such a readjustment in no way warrants a blanket rejection of the Commission's work, merely a modification of it. I submit that on the basis of the material available to us, our conclusions were natural. You note that, if the "high hills" spoken of by Garcilaso encountered during the march of the Spaniards from the south, were part of Crowley's Ridge, the Spaniards could not have crossed the Mississippi at Commerce Landing or Memphis. They saw the town *from* the Ridge — if the Ridge it was — not the Ridge from the town, and there is every reason to believe that the Casqui Indians controlled Crowley's Ridge to the east as far as the Mississippi and that their villages were scattered west as far as White River. A crossing of the Mississippi below Helena whether at Sunflower Landing or at some other point was therefore inevitable.

I will not enter into a controversy as to whether De Soto marched west from the Chickasaw sites in Pontotoc County, Mississippi, or from those in Lee County. I am merely sure that he crossed the Mississippi River below Helena. Paucity of sites in the supposed Aquixo territory I regard of little importance since neither Biedma nor Garcilaso mentions the province, Ranjel indicates only one main town, and Elvas is inclined to exaggerate. All engulfing "old man river" may account for lacunae here. As to one archaeological site I remain heretical if that is necessary, for the remains about Menard are exactly where the great town of Quiguate should have been, our archaeologists admit to a considerable occupancy here before De Soto's time, Baytown, and a considerable occupancy later and I don't believe the population just dodged 1541. It is just possible that archaeological chronology is not infallible. Besides, as over against a more northerly location, we have to note that the word Quiguate resembles a number mentioned in the narratives south of it — Guahate, Catalte, Chaguate, Taguanate — but none to the north.

CONCLUSION

What looks at first like a complete refutation of the conclusions of the De Soto Commission in general and mine in particular regarding the course pursued by De Soto's army through Arkansas proves to stem from an entire failure by the authors of the paper under discussion to grasp the significance of our work in identifying the rivers Casqui, Coligua, and Anilco. When that is rectified, the main part of the criticism collapses, leaving

only some suggestions of minor changes. Such changes as the result of archaeological work are to be expected and welcomed but unless those who undertake it understand thoroughly the conditions and limitations placed upon them by the narratives and the topography they are likely to misfire.

Another archaeological vice of the present paper seems to be an obsession that sites will be found in the exact condition left them when De Soto marched away. An attempt to match impressive archaeological sites with those particularly stressed in historical documents is natural enough but it by no means follows that there will be a perfect match or that wherever Indians lived, for however short a time, we shall invariably find traces of them.

Lack of space has prevented a more detailed criticism of the present venture of Messrs. Phillips, Ford, and Griffin into southern history, but it is only fair to add that it constitutes only a small part of what impresses one as a very valuable archaeological publication and that it adds some useful items in spite of a fundamental methodological error. I regret, however, that it should have resurrected certain theories of the route pursued by De Soto which ought now to be relegated to a historical museum.

JOHN R. SWANTON
22 George St.,
Newton, Mass.
March, 1952

COMMENTS ON "THE HURON AND LALONDE OCCUPATIONS OF ONTARIO"*

In his systematic analysis and delineation of a Lalonde focus in southern Ontario, Ridley (1952) has made an important contribution to our knowledge of the prehistoric Iroquoian occupations of a region as yet ill-represented in the archaeological literature. However, the writers do not find themselves in agreement with Ridley's inclination to consider the Lalonde diagnostic high collar ware "to be the ancestor of the late Mohawk, Onondaga and Susquehannock collared vessel" (p. 205). Evidently considerable antiquity would have to be assigned to Lalonde if it were to be the prototype for such a profound metamorphosis. On the other hand, it is felt that the possibility of a late prehistoric status for this focus and a cultural position as a stage of "developmental Huron" should not be rejected despite the clear cut differences between Lalonde and contact Huron which Ridley has shown in his trait analysis. The remarks which follow are offered to substantiate this point of view. Some of the data presented have not yet been published and were largely unknown to Ridley (Emerson, 1952).

Ridley is quite aware that certain Lalonde features were shared by sites like Uren, Lawson and Middleport (Wintemberg 1928, 1939, 1948) in southwestern Ontario but the relationship is considered tentative and indirect. The materials of Lalonde type found at the York and Kinghorn sites, on the other hand, more clearly indicate the southern distribution of this culture. However, it should be noted that the diagnostic Lalonde high collar ware is much less popular at these sites (15 per cent of the total recorded rims for the two sites) than at the Lalonde site itself (47 per cent of the total rims recorded for this site). The samples are small, but suggest that Lalonde high collar ware was in the process of development as Lalonde-like cultures moved from south to north, rather than in the opposite direction, in central Ontario.

The recent excavation of two sites in the environs of Toronto, throw additional light on the genesis of Lalonde culture. These are the Downsview and Black Creek sites (Emerson, 1952). Although the typical high collars were not found, these sites are duplicates of Lalonde in many other respects. The principal pipes were the barrel ring (Ridley, 1952, Fig. 67, 34), apple bowl ring (Fig. 68, 37) and plain Iroquois trumpet forms (Fig. 67, 35) such as were found at the various Lalonde sites. Similarly, there was a notable absence of contact Huron features. The presence of the plain trumpet pipe, in particular, marks these sites as post Middleport and Uren. The castellations found at the Lalonde sites are typical middle period forms; the classic pointed type (Fig. 67, *19, 24*) and the pointed castellation associated with complex throat decoration (Fig. 67, *32*; 68, 32) are common at both Downsview and Black Creek. However, the castellation associated with the Lalonde high collar (Fig. 66, *23A*) was rare at the latter sites again suggestive of a northward movement to a peak of development in the Lalonde area. The castellation associated with a type of rim referred to by Ridley as "rolled face" (Fig. 67, *26*), occurs rather infrequently at the Webb, Lalonde and York sites in his survey. This form, which was quite popular at Downsview and Black Creek, appears to have achieved its peak development at the Middleport and Lawson sites (Wintemberg, 1948; 1939). This distribution is a further indication of northward movement in the formation of Lalonde culture as found in north Simcoe County.

The presence or absence of worked deer phalanges would appear to be one of the most useful traits in the evaluation of the chronological position of Lalonde. Deer toe bones occur in two major categories — those which have been described as elements in the cup-and-pin game and those which have been described as "flattened variants." The former occur on a great many Ontario Iroquoian sites but are conspicuously absent from contact Huron sites. These appear to have reached their greatest popularity in the southwestern peninsular area and occur with decreasing frequency on sites to the north and east of this area including Black Creek and Downsview. The second type — the "flattened variant" — appeared later and achieved a high degree of popularity at the Roebuck site (Wintemberg, 1936). These are not found at Uren, Middleport or Lawson, of the south-

*This article was written before the appearance of "The Fallis Site," *American Antiquity*, Vol. 18, No. 1, 1952.

western group; they are present at Black Creek, in the central area; and are also absent from contact Huron sites. Of the sites described by Ridley, only the "flattened variant" type is reported, and its occurrence is restricted to the Webb site (Ridley, 1952, Fig. 68, *42*). This element is indicated for Lawson and Middleport in Ridley's trait list, but the phalanges found on these sites had not been flattened, whereas those found on the Webb site had been both flattened and drilled. It is felt that the absence of worked deer phalanges may well prove to be a crucial argument in support of a late prehistoric dating for the Lalonde culture.

Further indications that movement took place in a south to north direction during late prehistoric times are provided by regional differences in the proportions of contact sites in Simcoe County. These proportions increase steadily from a southern minimum to a maximum in the northern townships in which most of the several hundred located sites have yielded European trade goods. The most southerly areas have been less well surveyed but of these, Tecumseth Township has 14 per cent contact sites, West Gwillimbury 20 per cent and, in Innisfil farther north, there are 28 per cent. The central townships, including Vespera, Oro and Flos, average about 35 per cent contact sites; in the most northerly townships of Orillia, Medonte, Tiny and Tay, which comprise the historic territory of the Hurons and in which all but three of the sites in Ridley's series are located, the proportions of contact sites range from 73 per cent to 85 per cent. The above proportions were compiled from data in the Ontario Site Index of the Royal Ontario Museum of Archaeology in Toronto.

These various data suggest that if Lalonde is to be regarded as a late prehistoric phase of Huron development, an investigation of sites in those intermediate areas between historic Huronia and earlier sites such as Downsview and Black Creek in the extreme south, should provide supporting evidence. Preliminary studies in Innisfil Township strongly indicate that this will prove to be the case though much work remains to be done (Popham, 1950). A sample of more than 2,000 sherds together with other artifacts, which have been recovered from a site in north Innisfil (south half of lot 20, conc. 12), have an important bearing on the problem at hand. Of 714 rims, 68 per cent can be classified unmistakably as Lalonde high collar sherds. This is noteworthy since the frequency of this ware in Ridley's sample appears to be about 47 per cent. Clearly a difference in this direction would be expected if the thesis argued here proved to be correct. If Lalonde culture were a phase of Huron development, manifested in conjunction with northward movement, then its peak in late prehistoric times would be expected to occur in those areas, such as Innisfil, immediately south of the historic home of the Hurons in north Simcoe County. Castellated rims, on the whole, are scarce (10 per cent of all rims) in the Innisfil sample, but the incipient castellation typically associated with the diagnostic high collar ware (Ridley, 1952, Fig. 65, *23A*) is the predominant type. Pipe forms are also shared with Lalonde, the plain trumpet and barrel ring varieties being most common. A detailed comparison of the ceramic features of this site with those of contact Huron sites, especially the early historic village of Cahiague (McIlwraith, 1946), revealed a similar absence of many contact Huron traits. Notable, however, was the presence of a secondary ceramic type (represented by 13 per cent of all rims), characterized by a short collar and simple incised decorative elements, which was shared by the Huron sites. This ware is similar to Ridley's trait 18 (about 12-per cent of all rims in his Lalonde series) and occurred in the contact Huron material as well as the Lalonde. Finally, it should be recorded that there are indications of Lalonde features in the ceramic ware from a site in central Innisfil (south half of lot 15, conc. 7) which has yielded a small quantity of European trade material. The sample is much too small to support definite conclusions, but this site evidently deserves special attention in the future since it may provide crucial data for the establishment of the chronological position of Lalonde.

In the light of these considerations, it is difficult to understand how a ceramic type, apparently developed in the course of movement into north Simcoe County from the southern extremities of Ontario during late prehistoric times, could be a prototype for Mohawk, Onondaga, and Susquehannock far to the south. Moreover, it would appear that any discussion of Mohawk or Onondaga development would have to take account of the Roebuck manifestation in Grenville County, Ontario (Wintemberg, 1936) as well as related sites in Victoria County to the east of "Huronia" (Emerson, 1952). Further, there are the similarities, pointed out by Wintemberg (1946), between Roebuck and the Sidey-MacKay site on the Nottawasaga River. Perhaps the obvious dissimilarities between these two sites and the Lalonde group account for Ridley's silence on the matter. But this, in turn, suggests that if Lalonde is not related to a Sidey-MacKay tradition in Simcoe County, the probability that it is related to contact Huron is increased. Lalonde, of course, would have to undergo considerable change to become either.

Thus, the exact nature of the relationship of Lalonde to Huron has still to be established. Ridley's trait analysis indicates that rim sherds featuring simple oblique incised decoration and carinated vessels featuring hachured plats and chevrons on the body were shared by both the Lalonde and contact Huron series (Ridley, 1952, traits 18 and 31). These important correlations taken in conjunction with the Innisfil data and other factors discussed, suggest to the writers that further excavation in "Huronia" and, particularly, in the southern townships of Simcoe County will reveal the necessary intermediate steps to account for a transformation of Lalonde to contact Huron during late prehistoric times.

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J. N. EMERSON
ROBERT E. POPHAM
Department of Anthropology
University of Toronto
Toronto, Canada
March, 1952

CRADLED INFANT FIGURINES FROM TENNESSEE AND MEXICO

A remarkable resemblance exists between a pottery figurine from Tennessee, representing an infant strapped to a cradle board, and two figurines from Mexico.

Figure 74 is taken from Thruston's "Antiquities of Tennessee." He says of it:

> Among the archaeological treasures found in the stone graves of the Noel cemetery, recently discovered near Nashville, was the unique little image, in clay, of a child or papoose strapped to its cradle-board, photo-engraved in Plate IV and also illustrated in Fig. 31.
>
> It was found in a child's grave by Mr. George T. Halley of Nashville, an intelligent young explorer and collector, from whom we obtained it. The [line] illustrations are correct in their details, but slightly magnify its rudeness, as will be observed by turning to the more exact photo-engraving. It is nine inches long and four inches wide, and was doubtless placed by the hands of some weeping Indian mother in her child's grave, as a memorial tribute, or as a toy or doll of which the child was fond (Thruston, 1890, p. 113).

Figure 75, *a* and *b*, are taken from Kelly's illustrations of two Mexican pottery figurines, each about four inches long, the length of *b* being given as 10 cm. The first is from tomb 6 at Los Ortices in the state of Colima, the second "purchased, reputedly from Pancitlan" in the state of Jalisco (Kelly, 1949, Figs. 80, *h*, 79, *m*. A half-tone front view of the latter is given in her Pl. 25, *d*). Both are attributed to the Tuxcacuesco-Ortices ceramic complex as encountered at Los Ortices and other Colima sites and at Tuxcacuesco and other Jaliscan sites, including (p. 204) two at Pancitlan.

The similarities between the Tennessean and the Mexican renditions of the subject are obvious. Both arms of the Pancitlan infant are confined by the bindings, as in the Nashville specimen. Otherwise the Pancitlan specimen, as seen in the cut and in the half-tone front view not here produced, conforms rather closely to that from Los Ortices, particularly with respect to the bonnet over the head, the pillow, and the modeling of the pubic region and bandy legs. The free hand carried to the face of the Los Ortices infant, at first sight simply a pleasing touch of naturalism, may have some special significance, as the same gesture is to be seen in two effigy rattles illustrated by Kelly, one representing a human figure and one a bear (Kelly, 1949, Fig. 74, *e*, *h*).

The Nashville figurine differs conspicuously from its Mexican counterparts in being more than twice as large, in the absence of the pillow, and in the somewhat more finished execution of certain details, particularly the feet and the eyes, which may be due to the greater scope afforded by the larger scale figure as much as to superior skill. The modeling of the forehead of the Nashville figurine, considered by itself, would probably be interpreted as hair, but may correspond to the headgear of the Mexican examples.

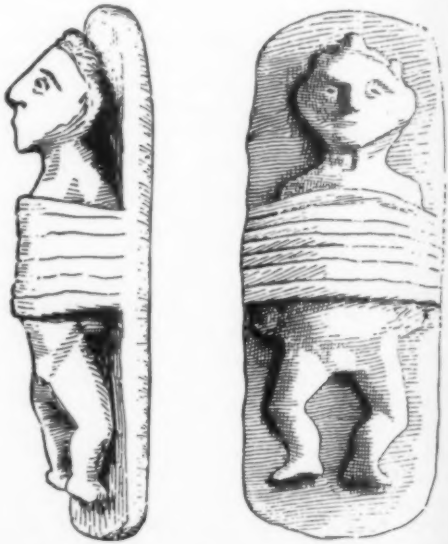

FIG. 74. Nashville, Tennessee. After Thruston.

The parallelism in subject and treatment between these figurines is rendered the more striking by the apparent dearth of other examples from either Mexico or the eastern United States. Representations of a child in its mother's arms, or slung on her back, are not infrequent in Tuxcacuesco-Ortices (Kelly, 1949, p. 117, Figs. 80, *i*, 82, *a*) and Middle America generally (*e.g.*, Kelemen, 1944, Vol. 2, Pl. 134. "Variations on a Theme") and occur as far north as the Knight mound group in Illinois (McKern, Titterington, and Griffin, 1945, Pls. 22, 23); but a preliminary sampling of illustrations of Middle American figurines revealed no other infants on cradle-boards, with one possible exception, while Shetrone follows Thruston in terming the Nashville cradled infant unique (Shetrone, 1930, p. 424).

The possible other Mexican example found is a small figurine purchased by Vaillant at Ticoman and called by him a "person in bed." However, the figure is tied by a binding about its middle to a board and has its hand to its face as in the case of the Los Ortices infant. The legs are not indicated. On the basis of the headdress and features Vaillant assigns this figurine to type H iv, which occurs sparingly in the latest levels at archaic Ticoman as well as under the lava at Cuicuilco and "gives the best transitional lead into such later developments as the so-called Tarascan Culture in the west of Mexico" (Vaillant, 1931, Pl. 64 and legend). A pottery effigy from "northwest Mexico" in the Musee de l'Homme depicts what seems clearly an adult figure lying on a footed couch, or bier, to which it is fastened by three bands across the chest. The head, in a turban-like cap, is supported on a raised headrest (Kelemen, 1944, Vol. 2, Pl. 113, *c*).

The Southwest affords a few renditions of the cradled infant theme. A jar in a seventh century Basketmaker III pit house on the Mesa Verde contained a clay object, doubtfully identified as a miniature cradle, and figurines, one of which "fits nicely into the cradle, whether by design or by coincidence" (Lancaster and Watson, 1943, pp. 195, 197). A half millennium later what has been euphoniously referred to as the "babe in cradle ladle handle" is found in northern Arizona. In the best examples the "babe," a crude figurine with a flat head and cylindrical body, rests on the ladle handle; arched around the head is a laterally projecting band of clay representing the canopy of the cradle-board, while a flat band of clay, grooved to represent multiple turns of the binding, secures its middle to the handle (Fewkes, 1926, pls. 6, 7; Smith, 1952, p. 106; Beals, Brainerd and Smith, 1945, Fig. 53, *c*; Peabody Museum of Harvard, unpublished specimens from Awatovi[1]). A plaque of unbaked clay, three inches long, from Awatovi is similar in shape to the Nashville cradle-board; a probable infant effigy attached to it is too damaged for description. A cradle of wicker and buckskin, containing a clay image seven or eight inches long, comes from Torrey on the Fremont River in Utah. If assignable to the Fremont culture it may date from about 1100, but it is possible that either the cradle or the whole assembly is of a later period.

In an increase rite found at several pueblos a woman who desires a child receives a doll baby in a miniature cradle which she tends as if it were real. At Cochiti the doll and cradle are of wood (Dumarest, 1919, p. 141, Pl. 6), and two wooden dolls on cradle-boards obtained by Stevenson at Zuni (Stevenson, 1883, Figs. 487, 489) and compared by Thruston to the Nashville figurine may be connected with this rite, although use of a clay doll at Zuni is also mentioned by Parsons (1919, p. 282). In the similar Pomo rite the doll is of clay and wood and a baby basket is made for it (Loeb, 1926, p. 246). At Cochiti, if the woman dies the doll is "buried or hidden with her other things." At Zuni, the continued survival of a child born as a result of the use of the doll is dependent upon the careful preservation of the doll, which is considered as the "heart" of the child. It is perhaps not too drastic an extrapolation to conjecture that some such beliefs or practices in ancient Tennessee or Mexico may have imparted greater significance to the mortuary deposit of our cradled infant effigies than the purely sentimental one suggested by Thruston.

Definite Mexican influence on the ceramics of the southeastern United States and, specifically, on the ceramic effigies of Tennessee (Thruston being one of the sources cited) was noted by Vaillant (1932, pp. 11, 20) and has since been generally recognized. If the comparison here adduced is considered as a specific example of such influence, it raises a problem as to comparative dates. A tomb at Chanchopa in Colima contained a Teotihuacan "thin orange ware" vessel together with a vessel of local origin probably assignable to the Tuxcacuesco-Ortices horizon, and on this "thin and dubious strand of evidence" Kelly tentatively equated Tuxcacuesco-Ortices with Teotihuacan III (Kelly, 1949, p. 145; Table 40). If this is correct, Kelly's cradled infants can hardly be much later than the eighth century and may

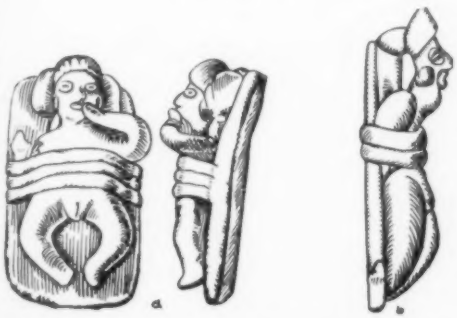

FIG. 75. a, Los Ortices, Colima. After Kelly. *b*, Pancitlán, Jalisco. After Kelly.

[1] I am indebted to Dr. J. O. Brew for calling to my attention these unpublished specimens in the Peabody Museum of Harvard and for permission to refer to them here.

be substantially earlier.[2] The radiocarbon date associated with the Cuilcuilco figurines assigned by Vaillant to the same type as the Ticoman "person in bed" is 470 B.C. ± 250 years (de Terra, 1951, p. 36). On the other hand, recent opinion places Mexican influence on the ceramics of the Southeast in the Middle Mississippi period, at a date not before 1400 A.D. (Phillips, 1940; Bennett, 1944; Ekholm, 1944; Griffin, 1944), although Bennett (1944, p. 232) has remarked in this connection that: "These arguments contain a great many loopholes, not the least of which is the fact that early Middle Mississippi cultures in Eastern Tennessee show relative ceramic chronology of an earlier period than any type of Mississippi culture in the lower Mississippi Valley."

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[2] de Terra (1951, p. 36) cites a 1941 paper by Caso suggesting an eighth century date for Teotihuacan III and discusses radiocarbon dates which tend to put it several hundred years earlier. Caso (1944) gives a table putting Teotihuacan II-III at 200-600. A table developed at the Fourth Round Table Conference places Tuxcacuesco-Ortices at about 600 (Reproduced in Ekholm, 1947).

* References to "Tercera Reunion" are to: *El Norte de Mexico y el sur de Estados Unidos (Tercera Reunion de Mesa Redonda sobre Problemas Antropologicos de Mexico y Centro America*, 1943), Sociedad Mexicana de Antropologia, Mexico City, 1944.

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Noel Morss
Needham, Massachusetts
March, 1952

ROCK-CUT BASINS ON SAINT LUCIA

For some time I have been trying to find a meaning to certain rock-cut basins on Saint Lucia in the British West Indies. One series, numbering 35 small basins, is situated at Micoud on the southeast coast (Fig. 76). This series is in a straight line at the edge of a bay; in fact, it ends right in the sea. An attempt to photograph it failed. There is a second series about a mile to the south, not far from the sea, on the top of a rocky elevation above a stream (Fig. 76). Here again, I have not

FIG. 76. Map of Saint Lucia, showing the locations of archaeological sites.

yet been able to get photographs. The third series is also on the east, or windward, coast at a place called Dauphin. The following is a brief account of my findings at this place.[1]

Dauphin is near the northern end of the east coast, some 12 miles from Castries, the capital (Fig. 76). The bay here faces practically east and is shut in, to seaward, by cliffs. A small stream runs into the bay on the south side and a swamp extends on each side of the stream around the adjacent valley mouth. On the south side of the stream, almost at the spot where it enters the bay, are a petroglyph and the basins, which lie roughly speaking in a line parallel to the stream. The petroglyph is farthest to the west.

The rocks into which both the petroglyph and the basins have been cut appear to be of igneous formation, perhaps basalt. Nearby is a great quantity of fairly rectangular blocks of the same stone. The district is volcanic, or rather was, and these blocks seem to have solidified, more or less geometrically, after some terrific eruption.

The petroglyph appears to be on one of the above-mentioned blocks, sunk maybe 4 feet in the earth, with about 3 feet above soil. It is about 20 inches wide and

[1] I am indebted to the Headmaster of St. Mary's College at Castries for accompanying me on my journey to Dauphin and for taking the photographs (Fig. 77).

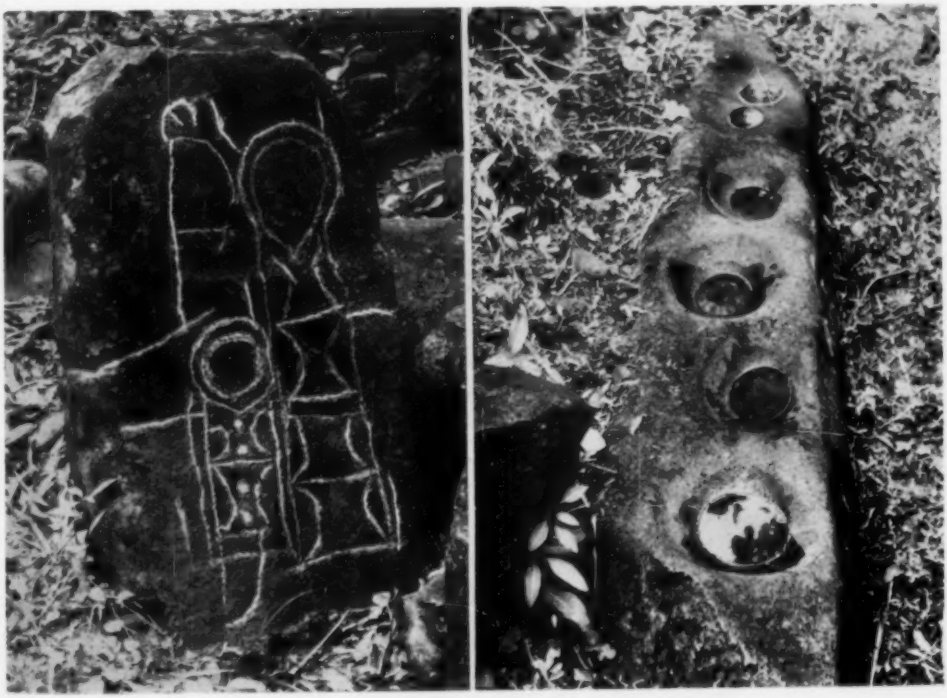

FIG. 77. Petroglyphs *(left)* and rock-cut basins *(right)* at Dauphin, Saint Lucia.

9 inches thick. The stone is slightly inclined to the east and the side with the pictograph facing west. The markings are, of course, worn and weathered; we chalked them out to take the photos (Fig. 77, *left*). Opposite the pictograph, still more to westward, is a block of rock that may have been used as a seat.

To come now to the basins (Fig. 77, *right*), the first of these is only a few inches to the east of the petroglyph and just behind it, on the upper surface of an irregular block of stone, about 18 inches on a side. The depression takes in most of the upper surface and is rather shallow. The second basin is a few feet to the east of the first and is roughly similar to it.

The third excavated depression (it can hardly be called a basin), is found on the surface of one of the big, rectangular blocks referred to. This block lies in the path that runs alongside the stream, still more to the east. It is very worn, presumably by human feet, but the form of the depression can be made out. On the same block occurs another depression, still more worn and effaced.

The other basins occur in two full-sized blocks to the east of the former. One block lies aslant of the path and stream, the other lies practically parallel to them. In both blocks the basins are regularly spaced out, well-fashioned, showing no trace of having been used in the fabrication of implements. A pattern seems to have been followed in excavating the depressions on the first of these two blocks; some are round and some are oval. In the case of the second block, all the basins are round and are in a straight line.

In view of the situation of the petroglyph, I do not think it could be supposed that the Negro slaves of the eighteenth century had anything to do with the fabrication of the basins in question. There would appear to be some real connection between petroglyph and basins. If, as I believe it is generally supposed, the petroglyphs of the Amerindians were connected with their cult, worship or ritual, might it not be supposed that these basins at Dauphin had some purpose connected with religion? Whilst the worn, shallow depressions on the two small blocks and the block in the path might be compared with the Venezuelan basins which Professor Cruxent[2] has called "workshops," the well-cut, regular, patterned basins in the two big blocks most eastward seem to demand another explanation.[3]

[2] José M. Cruxent, "Archaeology of Cotua Island, Amazonas Territory, Venezuela," *American Antiquity*, Vol. 16, No. 1, 1950, pp. 10, 14. Rock basins have also been reported from the island of Martinique; see, for example, Eugène Revert, *La Martinique*, Paris, 1949, pp. 199-202.

[3] Since writing the above article I have examined two sites with rock-cut basins on the Leeward side of Saint Lucia. In one case the basins are close to a petroglyph of simple design, at a spot where a ravine falls into the sea. Perhaps this may lend weight to the supposition that petroglyphs and basins figured in some kind of religious cult.

Rev. C. Jesse
Castries
Saint Lucia, B.W.I.

THE RECENT OCCURRENCE OF BISON IN NORTHEASTERN CALIFORNIA

In a recently published book, "The North American Buffalo. A Critical Study of the Species in its Wild State," the author, Frank G. Roe, has undertaken an extensive study of the buffalo of North America — including its habitat and historical chronology. Mr. Roe must be complimented on the infinite amount of labor he has put into this very useful treatment of the American buffalo, and for the service he has rendered the numerous archaeologists who will find his study of prime importance when undertaking work in areas within the recent range of these large animals.

Concerning the occurrence of buffalo in California Mr. Roe has this to say: "There seems, in short, to be no real evidence of any character for the presence of the historic buffalo in (modern) California at any time" (p. 282). It can be pointed out, however, that there is reliable evidence showing that buffalo occurred in northeastern California probably as recently as 1830. Knowledge of the maximum recent range of the buffalo is of importance to the archaeologist; thus Mr. Roe's statement concerning the occurrence of buffalo in California needs clarification.

C. Hart Merriam (1926) obtained ethnographic information on the occurrence of buffalo in the vicinity of Eagle Lake, Horse Lake, Madeline Plains and Honey Lake — all in Lassen County, California. He also obtained the native name for this animal in the Achomawi, Atsugewi, Klamath and Paiute languages. These buffalo were not necessarily wandering "strays" since Merriam indicates that a herd lived in the vicinity of Eagle Lake.

In substantiation of Merriam's information I was able to obtain similar information from Honey Lake Paiute informants while making an ethnogeographic survey among these people last summer (1951). The Honey Lake Paiute, or wadátkʌt as they call themselves, (or wadadökadö, Stewart, 1939, p. 137), tell of their people hunting the buffalo in the vicinity of Honey Lake before the influx of the white settlers. Most of my information concerning the buffalo in Honey Lake Valley was obtained from a very old woman who had had both the buffalo and the methods of hunting it described to her by her parents; her parents (possibly only her father) had had first-hand experience with buffalo. It was said that the buffalo were very hard to kill; one buffalo had many arrows sticking out of it before it was killed. My informant spoke of arrows made of arrowcane (*Phragmites communis*) being used to shoot buffalo cows.

Several informants described a buffalo wallow (paguts tudʌ tawágan) located on the west shore of Honey Lake between the towns of Milford and Doyle in Lassen County. It was in the vicinity of this wallow (Riddell, n.d. p. 14) that a buffalo trail led to the southwest toward Plumas County over a rather low pass. The buffalo (called paguts by these Paiute people) were said to have taken this trail over the mountain, a portion of the Sierra Nevada; how far this trail went or where it led

was not stated by my informants. It can be assumed, however, that these beasts did not go very far in this direction because of the timbered and mountainous aspects of the terrain.

Since my oldest informant was born *circa* 1860, and was one of the younger children in her family, it was not at all beyond reason that she should have had contact with individuals who had seen buffalo in Lassen County. In fact, this is the statement she made. From her personal history it appears that her father may have been at least 40 years old when she was born, as her mother was his second wife. From these data I suggest the date of about 1830 as the date of extinction for the recent buffalo in northeastern California. The date of 1830 may be considered to be about the earliest date for possible white contact in Lassen County. It was in this year that Peter Skene Ogden went from the Columbia River to the mouth of the Colorado, traveling east of the Cascades and the Sierra Nevadas (Leader, 1949, p. 3). Although it is not likely that Ogden went through the territory of the Honey Lake Paiute, contact was possible at that time.

Additional ethnographic support for the occurrence of buffalo in northeastern California and vicinity is given by Barrett and Gifford (1933, p. 221) who made the following statement: "Buffalo skins were sometimes used [by the Miwok]. These were obtained by trade from the Washo and Eastern Mono." These authors apparently were unable to determine where or how the Washo and Eastern Mono (or Northern Paiute) obtained the skins, but it may be assumed that these two peoples did not have to go far to trade for the skins — or kill the animals themselves.

Substantiating the ethnographic evidence is the report of the recovery of a buffalo skull with a projectile point imbedded in one of the orbits. This find was made in Lassen County during the construction of a railroad extension about 20 years ago. The report of this find was published in the *Pacific Sportsman* (Anonymous 1931).

In his article "The Western Limits of the Buffalo Range," Francis D. Haines (1940) is inclined to believe that the data are too scanty to extend the range of the buffalo to southern Oregon, northern Nevada and northeastern California. Although Mr. Haines cites Merriam (1926) and Bailey (1936) he appears not to find Merriam's statements of enough validity to extend the western range of the buffalo into northeastern California.

My ethnographic data from the Honey Lake Paiute indicate that not only were buffalo present in Honey Lake Valley *circa* 1830 but that some of these animals were cow buffalo, and that these beasts were numerous enough to have made and used a wallow and a trail, which apparently led into the Sierra. These data tend to substantiate Merriam's data that the buffalo in northeastern California were not occasional stray animals drifting into the area, but bands living in the region. It seems likely, however, that continued investigation will show that the buffalo was a comparatively recent addition to the fauna of northeastern California. It also seems quite probable that the buffalo did not occur in large enough numbers to be of great economic importance to the Indians of the region.

In conclusion it would now appear that there is sufficient information on the occurrence of buffalo in northeastern California that the western range for the American buffalo might be placed at the crest of the Sierra Nevada Mountains — at least for Lassen County where ethnographic information has a buffalo trail leading into these mountains.

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FRANCIS A. RIDDELL
Department of Anthropology
University of California
Berkeley, California
March, 1952

THE BRITISH MUSEUM COLLECTION FROM NEAR AVILA, CALIFORNIA

Archaeological specimens from the United States, now in European museums, are generally unavailable to American scholars. The writer, while resident in England during 1950 and 1951, made a consistent attempt to view and describe American archaeological material which was unique in his experience. A few of the notes collected at the British Museum are presented below.*

* The writer should like to express his gratitude to Mr. Adria Digby, keeper of the collections in the Department of Ethnography, British Museum, who made the specimens discussed below available for description.

The specific specimens discussed here are from the region of Avila, San Luis Obispo County, California, a coastal area lying about 140 miles north-west of Los Angeles, 180 miles south-east of San Francisco, and 18 miles north of the Point Sal area described by Carter (1941).

A considerable part of the British Museum's archaeological material from Western North America was collected by Rev. S. C. Freer and R. W. Summers in the years 1894 and 1895 at the sites near Avila, which had been discussed by Schumacher (1875) through his work at "Cave Landing" and "Fossil Point." The artifacts presented by Freer in 1900 are mainly of types common in local San Luis Obispo collections. However, below are described the four specimen types which are unique, or rare, in this area.

The cultural dating of all Freer specimens from San Luis Obispo and Santa Barbara counties is aided by Freer's statement that his excavations had produced manos at only one site; that site was in the town of San Luis Obispo (British Museum, Department of Ethnography, ms.). The mano is an artifact distinctive of the earlier culture periods identified near San Luis Obispo and Avila and is unknown in the late prehistoric sites of the region (Pilling, 1951, p. 199). The specimen types described below all come from other than Summers' mano-bearing site and likely represent the late prehistoric culture period.

Incised tablet (1900-407):

Figure 78, *d* shows a small incised tablet from a grave at Port Harford (now Port San Luis). The specimen is made of a block of pinkish, compacted, stratified silt-stone, measuring 3.9 cm. in width, 5.1 cm. in length, and about 1.0 cm. in thickness. The design cut into one face consists of two stripes filled in with crosshatching. The obverse side and the edges of the block are unmodified.

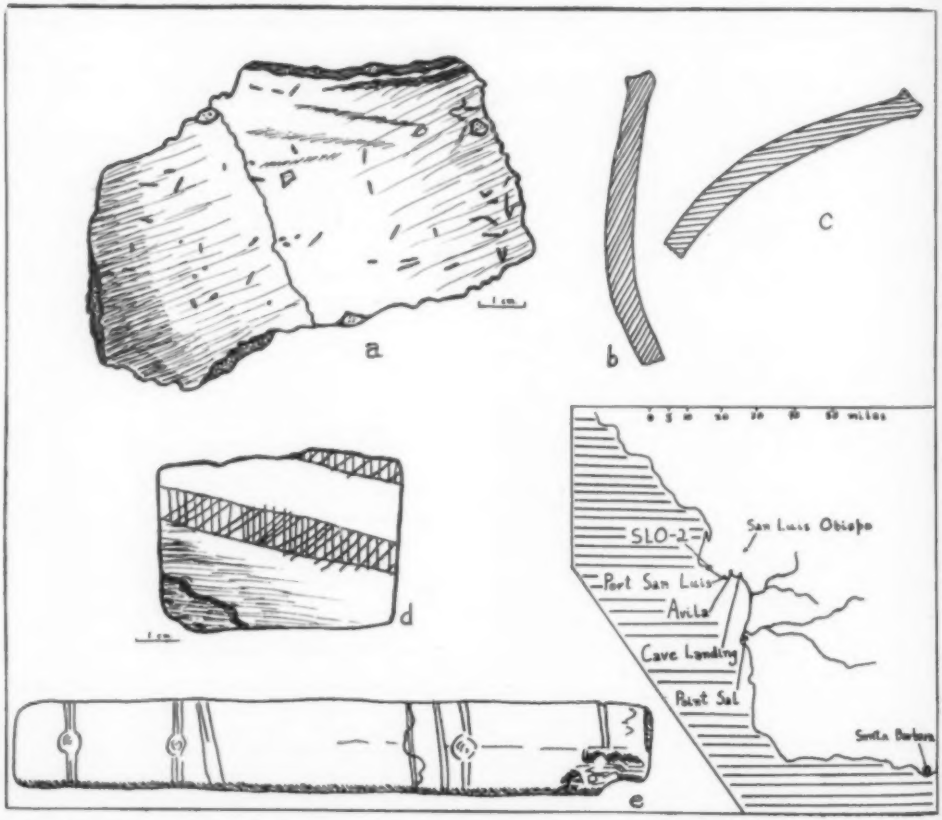

FIG. 78. *a*, The largest of two rim sherds from SLO-45, exterior pictured; *b-c*, cross-section of rim sherd in *a*, exterior to the left; *d*, incised silt-stone slab from near Port San Luis; *e*, grooved and cupped bar from near Cave Landing. From original sketch in the catalogue of the Freer Collection in the British Museum. *Lower right*, Map of the California coast adjacent to Avila.

Potsherds (1900-408):

Figure 78, *a-c* shows the largest of three potsherds, probably all from one vessel, recovered by Summers and Freer in a grave within the Marre garden, at the site now known as SLO-45. All three sherds (two rim and one body sherd) were found together with a burial. In 1895, pottery was noted by Freer as unique for this area; today, this is still true. Below is a tentative description based on the three sherds available:

Site: SLO-45

Period: Unknown, but presumably late, possibly historic.

Construction: Not determined.

Firing atmosphere: Probably uncontrolled; reduced appearance; small area of exterior exhibits pinkish color.

Core color: Exterior and interior margins, as well as core, black; color resembles asphaltum sand.

Firing clouds: None present.

Temper: Coarse, white granite sand, some lumps are .42 cm. across. Exterior surface suggests traces of fiber casts; no charcoal noted in casts; no fiber nor fiber cast visible in fresh break. Further temper provided by small grains of sand. This sand temper is probably not intentional. If straight casts are result of fiber temper, and not result of brushing of pot when wet, this fiber would be intentional.

Texture of core: Coarse.

Fracture: Crumbling.

Surface finish: Portions of exterior crudely smoothed, possibly with fingers. Exterior exhibits marks of scraping slightly below rim. Possible casts of fiber apparent on surface, even in area showing smoothing. Interior smoothed, probably with pebble.

Luster: Dull.

Surface color: Dirty grey-black; one pinkish area.

Form: Unknown; three sherds present.

Vessel size: Reconstructed diameter of vessel opening, approximately 19.2 cm.; greatest diameter of the vessel cannot be determined. Height of fragment 6.8 cm.; height of vessel may have been considerably greater.

Base: Not preserved.

Thickness of vessel wall: Body sherds .65 to .78 cm.

Rim: Slightly outcurved from parallel walls of vessel. Rim flat, but uneven with occasionally raised interior and exterior margins producing a concavity in rim top as shown in cross-section. See Plate 78, *b, c*. Finger-tip indentations just below the exterior of rim caused by pressing the finger-tip into wet clay from outside with palm of hand toward base.

Handles or lugs: Absent.

Decoration: Finger-tip indentation below the rim on exterior.

Slip: None.

Paint: None.

Range: No other specimens known in adjacent region.

Discussion: This pottery is distinctly different from both the unglazed Mission period pottery recovered at La Purisima Mission Indian Barracks, SBa-519, and the pottery known as Owens Valley brown ware (Riddell, 1951).

The Southern Paiute utility ware, described by Baldwin (1950), is sufficiently similar to the sherds from Avila to suggest that they may have come from the Southern Paiute region. This ware has been reported from the Alabama Hills in eastern California (Lathrap and Meighan, 1951, p. 23). The possibility of trade from this area to the coastal region is substantiated by the fact that trails connected Owens Valley with the San Joaquin Valley and the latter with the coast (Riddell, 1951, p. 14; Sample, 1950, Map). The specimen described here falls within the range of Southern Paiute utility ware in the details of firing atmosphere, core color, temper, texture of core, fracture, surface finish, luster, surface color, firing clouds, thickness of vessel walls, decoration, and lack of handles, lugs, slip, or paint. In contrast to the Southern Paiute utility ware are three traits: the possible fiber temper, the concavity in the rim top, and the visibility of the quartz grains especially on the exterior, in direct opposition to the description by Baldwin. The concavity in the top of the rim of these sherds is unusual, but is paralleled in the ethnographic Yokuts-Western Mono pottery (Gayton, 1929, pl. 99 *c* and 101 *f*). Perhaps this rim form is an occasional variant in Southern Paiute utility ware.

The vessel form discussed by Baldwin is not incomparable with the sherds recovered by Summers. Although, on the basis of three sherds, it is impossible to conclude that this vessel was one of Southern Paiute utility ware, it seems likely. When first viewed, the Summers specimens suggested to the writer the steatite olla form from Santa Barbara (Rogers, 1929, pl. 67-68). The rim when placed in the position shown in Figure 78, *c* appears as a pottery skeuomorph of the ollas. However, as the rim fragment coincides with the Southern Paiute utility ware known from California and adjacent states the original conjecture concerning vessel shape has been abandoned for lack of conclusive evidence.

The Avila specimens compare positively with several distinctive features of Southern Paiute utility ware: absence of true neck; dark and rough surface; and fingernail indentations just below the rim. Other distinctive traits mentioned by Baldwin, are absent due to the fragmentary nature of the specimen recovered.

Blue paint (1900-363):

Although unavailable to the writer through misplacement during World War II, two additional artifact types reported in the Freer Collection are discussed below, for they are rare in the Avila region.

Summers reports that he recovered blue paint from a grave near Avila, San Luis Obispo County. This is the first known occurrence of blue paint as a burial accompaniment.

Blue paint is known otherwise on the South Central Coast in three separate occurrences. Pictographs at Mnt-79, 100 miles to the north of Avila, are painted in both a bright blue and a blue-black paint; another blue pictograph occurs at SLO-105 on the Carriso Plains, 45 miles due east of Avila. Near Port San Luis at SLO-2 a painted slab has been recovered which bears a blue paint wash (Pilling, 1951, p. 197).

The mineral from which this blue paint is made has not been identified chemically. If the sample in the British Museum is located again, the component minerals can be determined from the powder collected by Summers.

Grooved and cupped bar (1900-406):

A second unique specimen, now misplaced in the British Museum, is a grey stone slab with oval cross-section. This specimen, 16 inches in length, has seven grooves, which cross its width (Fig. 78, *e*). Medially in each of three grooves is one small depression or cup. The specimen has been broken in half, though both parts were recovered. Additionally one corner is battered.

Summers notes that he dug this specimen from a grave, near Cave Landing. Similar specimens are unreported for this or adjacent regions. Ultimately other specimens of this type may be recovered locally; now, however, further data concerning this artifact type are unavailable. Conjecture as to its use is impossible.

Aside from the four specimens described above, the Freer Collection contains two other interesting lots from Santa Barbara and San Luis Obispo counties; both are historic burials from different Indian sites.

Additional to the Freer Collection there are several lots of specimens in the British Museum which come from sufficiently pin-pointed localities to be of possible value to American archaeologists. A brief summary of these catalogue entries follows for the aid of other scholars.

1. 82, 12-8: 17 whole and partial projectile points from Woman's Land, Mass.
2. 87, 10-7 and 89, 10-2: 10 catalogue entries from Gulf Hammock (House), Levy County, Florida, containing two whole pottery vessels and eight projectile points.
3. 88, 9-4: 86 catalogue entries from Madisonville, Ohio, including three whole and several fragmentary pots, projectile points and bone artifacts.
4. 89, 11-14: two vessels from Brownstown, West Virginia.
5. 95, 7-17: 15 catalogue entries from Key Marco, Florida, including one boat-shaped wooden dish, one piece of netting and several pieces of cordage.
6. 96, 1-25: a seated human figure forming a bowl from Cowichan Bay, Vancouver Island, British Columbia.
7. St 269 o-q: two black stone celts from McLellan's Farm, near Lancaster, Gore Co., Ontario.
8. LI: 131 catalogue entries from Newfoundland with specific entries from Lake Bathhurst, Swan Island in Exploit Bay, Conche Harbour, Sop Island in White Bay, Toulinguit, Indian Brook on the north-east coast, and Green Bay.
9. Canada: six entries from the island of Montreal, Quebec.

However, for North American archaeologists the most important single body of material in the British Museum is the Vancouver Collection made by Hewett in the early 1790's (Dalton, 1897; Read, 1892). This ethnographic collection includes over 300 specimens from the Pacific coast of North America, from the following areas: Santa Barbara, Monterey, Trinidad, Columbia River, Namakizat, Point Mudge, Cook's Inlet, Cross Sound, Nootka Sound (Mowachut), Port Discovery, Rock Village, Hawslee, Village or Restoration Point, Strait of Juan de Fuca, Birch Bay, Two House Bay, Salmon Bay, Point Steward, Sea Passage, Clioquat, and Brown Passage. With careful use of the Hewett catalogue aided by our present archaeological data, the Vancouver Collection can be of great value. The original Hewett catalogue numbers are still retained on many of the specimens. These refer to entries which indicate the use of the artifacts. Detailed description of all Hewett, or Vancouver, Collection specimens should be undertaken. Limited time made this task impractical for the present writer.

The above note has dealt with only a few of the unique specimens in the collections of the British Museum, although other major collections housed at this museum have been mentioned. Other European museums contain similar collections; for instance, the fine ones made by Pinart and de Cessac and deposited at the Musee de l'Homme in Paris.

European anthropologists appear to be restricting their efforts primarily to European, Eskimo, and Middle American problems. The task of describing other American collections in Europe may easily fall to the occasional visitors whose interests are in prehistory of less popular areas of America.

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Arnold R. Pilling
Department of Anthropology
University of California
Berkeley 4,
March, 1952

BOOK REVIEWS

Five Prehistoric Archaeological Sites in Los Angeles County, California. EDWIN FRANCIS WALKER. Publication of the Frederick Webb Hodge Anniversary Publication Fund. Vol. VI. Southwest Museum, Los Angeles, California. 1952. 116 pp., incl. 49 pl., 20 figures. $3.50.

This report brings into a single reference data on five sites in the vicinity of Los Angeles, California which have been excavated under the direction of Edwin F. Walker of the Southwest Museum staff. These excavations have been done with volunteer labor. When a site was reported to the museum staff, Mr. Walker sent out a call for help and then patiently guided his helpers in recovering as much as possible from the area to be built on, flooded or otherwise lost for archaeological research. Mr. Walker and the museum staff have accomplished much, not only in terms of excavation but in the very important job of public relations for archaeological research.

Basic needs in the archaeological work in southern California have been excavations and reports on what has been done. Many sites have been surveyed, a number have been excavated, some with a degree of completeness, but few have been described in print. The general report of D. B. Rogers in the Santa Barbara area and the reports of Heizer and Lemert and Treganza and Malamud on the Topanga Canyon sites are exceptions. Extensive survey work, testing, and some excavation has been done in the San Diego area and a number of sites in the Los Angeles area were dug with W.P.A. funds but no site reports or descriptions of the artifacts found have been generally available. Much of this earlier work will be lost unless a few of the workers who have been in contact with the region and the work over a period of years make available some general remarks on what has been done. Mr. Walker's report is a step in the right direction.

The five sites include three in San Fernando Valley (two at the west end, Chatsworth and San Fernando, and one at the east end, Big Tujunga), a site at Pasadena, and one at Malaga Cove near Redondo Beach on the coast. Of the five sites, Malaga Cove has the greatest time span and can be used as an index site.

The artifact data are not presented as clearly as they might have been to satisfy many archaeologists. A list of the artifacts from each site would have been of value as an addition to this report.

Malaga Cove material seems to be the oldest. The lowest level (Level No. 1) is in the top three feet of a non-marine terrace which is over definite Pleistocene material. Woodring, in his geological work on the Pales Verdes Hills, determines this 25 foot layer of non-marine detritus to be late Pleistocene. This makes it a possibility that Level No. 1 is of very late Pleistocene. This could perhaps be checked with the Carbon 14 technique.

The culture of Level No. 1 was orientated toward the sea. There were some bone fragments but the bulk of the material was shell (50 per cent cockle, 22 per cent scallops, 20 per cent cove oyster, 8 per cent miscellaneous species). The shell is altered some but few shells are calcined. This may indicate that the people did not cook the shellfish in the shells and that the layer was exposed to weathering in a dry period so that not enough water filtered through the layer to alter the shell to any extent. This unaltered condition of the shell may indicate that here is an opportunity for checking for radiocarbon content.

An interesting contrast here to other sites on the coast of the early horizon is that no metates were found in the lowest level at Malaga Cove. This may be merely a result of the small sample of this level which was excavated, although it is exposed along the face of the cliff at a number of places and so far no manos or metates have been found in situ. Metates are well represented in early levels in the Santa Barbara area and in the San Diego region to the south. Level No. 1 may represent the earliest coast culture so far found. The projectile points found in the level suggest the interior types, but the sample is small. The mussel shell spoons are very much like those of the groups of the Northwest Coast and northwest California in later times.

There is evidence that at the time when people lived on Level No. 1 the site extended farther to the west. The cliff has been caving off and slipping. The dip of the level indicates that this remainder was toward the eastern edge of the site. A map of the whole site or a photograph showing the whole locality would have been of value to gain a better conception of the site and its relationship to the surrounding area.

Other levels of Malaga Cove can be tied with the other sites and with archaeological material north and south on the coast. A comparison of the material illustrated in this report with material from other sites indicates the possible relationship.

Mr. Walker has used the mourning ceremony as a connecting link in the material of the five sites. This is based on the fact that miscellaneous aggregations of debris were found which suggest that the people gathered up artifacts, had a big fire, and destroyed property. While this ceremonial may be the reason for some of the features it does not account too well for all of them. Some of the trash looks as if people just got tired of stepping over the camp debris, gathered it up and buried it. Perhaps it was necessary to clear up the camp before certain ceremonial periods. Some of the piles can be interpreted as caches. Some are no doubt ceremonial, but not always necessarily associated with mourning ceremony. These people, like most groups, did other things beside mourn the dead. Mr. Walker may be right but other possibilities should also be given consideration. There are many possible ritual traits in southern California and other cult complexes which should be considered.

It should be noted that the sites reported should not be considered as isolated but should be related to other

archaeological remains from each region. It might have been of value to include for each site a sketch map of the site in relation to others in the immediate vicinity as was done for the San Fernando site. This would have served to make people conscious of these remains and more alert to recognize other finds. This is, of course, dangerous in the southern California area where there have been cases of interested amateurs coming to anthropological meetings to hear of site locations and then racing out after the meeting to gather any loot still available, but we cannot go on hiding Indian sites. This is, of course, a problem in any area where there are active collectors.

Mr. Walker's paper presents many problems to which there are no ready answers. These problems include: the trade in and out of the Los Angeles area, the cultural relationships of the area to adjacent regions, the local problems of burial custom sequence, problems of the archaeological evidence of ceremonial cults, and many others. This report should help in showing some of the possibilities and opportunities of the area.

It is regrettable that Mr. Walker did not more fully attempt to relate this material to other work in the region, as it would have made the material more meaningful to archaeologists from other areas and to others who are not familiar with what has been done and the material which has been recovered. A bibliographical section at the end of the report would have been a good addition. Reference to the work of the University of California Topanga Canyon project is noticeable for its absence. There are also a number of collections and notes on the Malaga Cove site on file at the Los Angeles County Museum and in the Southwest Museum which would have been of value to consider along with the data collected by Mr. Walker.

There is increasing interest in the archaeology of southern California. Dr. George F. Carter of Johns Hopkins University has been making investigations in the San Diego area. The Archaeological Survey Association of Southern California has been making contributions, and work has been done by students from a number of local educational institutions, and there has been some work by enlightened amateurs. There is still need for excavations with good archaeological techniques and for reports on previous surveys and excavations and on the current work. Mr. Walker's report is a contribution toward this end. We can hope that others will follow his lead.

MALCOLM F. FARMER
University of Washington
Seattle, Washington

The Preceramic Horizons of Northeastern Oklahoma. DAVID ALBERT BAERREIS. University of Michigan, Museum of Anthropology, Anthropological Papers, No. 6. Ann Arbor, 1951. Pages 121, 3 pls., 14 figs., 2 maps. $1.00.

This Ph.D. dissertation analyzes the artifacts from three of the sites excavated by the University of Oklahoma WPA project in the Grand River Dam reservoir area, Delaware County, Oklahoma, 1937-40. These sites (Evans, Caudill, McConkey) were chosen from the many which revealed extensive preceramic occupation; pottery, when present, was confined to their upper levels and is usually of Hopewellian and other Woodland types.

Most of the stone artifacts described herein can also be found in the Ozark Bluff-Dweller culture in its agricultural but preceramic stages. The latter, however, is best known for its rich array of perishable objects, but neither its perishable nor its imperishable material has been closely analyzed. Thus the northeast Oklahoma material leads to a much wider knowledge of the Ozark Bluff Dwellers.

Baerreis recognizes three preceramic periods, the earliest showing a lack of milling stones with hunting probably more important than food gathering, and the later ones showing considerable use of milling stones, "and presumably of agriculture" because they are most similar to Ozark Bluff Dweller imperishable artifacts. All three, however, show a continuum and an obvious relationship with chipped-stone work of the eastern Archaic pattern. The general absence of elaborated forms of bone artifacts and ground or polished stone raises a question as to the strength of this relationship. The reviewer believes this condition to be a common one all along the Plains-Woodland borderland, and must be due to a marginal petering-out of elaborated Archaic traits, as Baerreis suggests.

Several recent suggestions that the Basketmakers and Bluff Dwellers were historically connected are reviewed, and I think Baerreis is fully justified in withholding judgment until someone presents detailed evidence for such a case, if there is one. It is necessary "to determine to what extent the resemblances are deeper than the common possession of maize horticulture by nonceramic groups still relying to a considerable extent upon hunting and gathering techniques" (p. 79). Although there are "clearly a great many more traits held in common between Mogollon and the Ozark region than can be demonstrated for any of the other southwestern complexes," even here there is considerable divergence in lithic elements (p. 81). Baerreis traces some artifacts comparable to those of the Ozarks complexes in the Southwest, Plains, Central Texas, and Woodlands in the best study of this sort yet to appear, yet unlike many other archaeologists he is well aware of the limitations; there is too much involved for a satisfactory "historical reconstruction" over such vast areas. For the present he leans more toward basic connections with the eastern Archaic for the Ozarks material. One might add that a comprehensive plotting of artifact distributions on a continental scale, with time factors where possible, must necessarily be the next great task for American archaeologists. Until then any inter-regional "historical reconstructions" are bound to be deficient and misleading.

Baerreis' survey and discussions, as far as they go, will provide a valuable starting point toward solving these larger problems. An example of the perspective gained is seen in the case of basket-marked pottery.

While this occurs in early Basketmaker and Bluff Dweller material, it also occurs in many other places from Alaska to eastern Brazil (p. 90), and the history of this trait thus cannot be known until it is examined on a large scale in conjunction with other evidences of historical contact between these points; multiple inventions of such simple traits are always possible. A similar caution is made regarding Jones' suggestion that Hohokam-Basketmaker maize spread from the Southwest to the Ozarks and beyond; "the distributional data is not sufficiently abundant to make certain that the Basketmaker complex is the sole possible source for the variety of corn in the Ozark region" (p. 93). This unwillingness to "solve" problems which are unsolvable without a great deal more work on ultimate distributions comes as a welcome relief.

In connection with the Evans midden site, Baerreis discusses his typological procedure (p. 13). The present "types" are designated with letters and numbers, temporarily. When more accurately defined in their variations and larger distributions they are to be described more formally and *named*. This distinction is certainly sound procedure but will be lost on many readers. To avoid this the temporary groupings should not be called "types." The tabulated measurements of temporary projectile-point "types" will be of value in further organization of this category here and in related complexes.

Projectile-point "Types A1, A2, and A3" are shown to correspond closely with what was called *Gary Stemmed* at the Davis site in east Texas, except that Baerreis believes his three subdivisions have some historical significance in the excavation levels, whereas I considered their features as variations within a single type. This should be tested elsewhere. "Type B1" corresponds to *Ellis Stemmed* at Davis, embracing similar variations. These and other names at Davis were intended as a mere starting point in the vast problem of more realistic ordering of projectile points and other artifacts in the Archaic and ceramic cultures of the Eastern United States, and they have already been shown to be applicable in the lower Mississippi Valley.

Projectile points of "Type H" probably can be referred, for the most part, to what are now called "Dalton points" in (late ?) Archaic sites in Missouri; this constitutes an apparently valid type found with similar variations in eastern Texas and Louisiana as well as Arkansas, perhaps even more widely. Baerreis unfortunately did not cite some published works in nearby Missouri which contribute to a better knowledge of the Bluff Dweller traits,[1] and when reports on the Graham Cave and Dalton sites are available, the projectile points and many other artifacts of this region should stand on quite solid footing.

[1] Compare Baerreis' "Type H" in Figs. 1, 6, 11, and Pl. 1, *F, I, K* with points shown for the Dalton Culture by Carl H. Chapman, in *The Missouri Archaeologist*, vol. 10, pt. IV, pp. 138-9. Chapman also illustrates pertinent projectile points for the Woodland cultures and Bluff Dwellers of Missouri in the same journal, vol. 10, pt. III, Figs. 22, 24, 28.

There is some question in my mind that two of the points belong to the Plainview type. One of these (Fig. 11 *L*, Pl. 1, *N*) has a rechipped blade and steep (beveled?) edge. Whether such points are rechipped Plainviews or were made in this shape originally, they are fairly common in (late?) Archaic sites throughout Arkansas, northeastern Texas, and northern Louisiana, considering only areas west of the Mississippi; so far as I know, bevels never occur on any early point types associated with extinct fauna. The other specimen (Fig. 11, *K*, Pl. 1, M) is only a basal fragment, hence it is not known whether its blade was beveled. Both specimens have smoothed edges but this feature also occurs on many "Dalton points." Baerreis has wisely not attempted to make too much of either specimen, and would concede, I believe, that they are not actually out of context with the Archaic nature of all the other preceramic artifacts.

Points of "Type G" show a sharp break in size range from the others and suggest a functional difference, namely that they were used on arrows while all the larger and heavier ones are atlatl dart points (p. 34). They appear first approximately midway in the occupation of the Caudill site. Since it is inferred that agriculture was present in these preceramic sites (because it was positively present in preceramic Bluff Dweller sites), it appears that use of the bow also entered this region before pottery if the functional use of the small, light points is correctly interpreted.

This is a thoughtful and useful publication, and will provoke further studies in this important central borderland between Plains and Woodlands.

ALEX D. KRIEGER
University of Texas
Austin, Texas

Greenhouse: A Troyville-Coles Creek Period Site in Avoyelles Parish, Louisiana. JAMES A. FORD. American Museum of Natural History, Anthropological Papers, Vol. 44, pt. 1, New York, 1951. Pp. 1-132, 23 pls., 49 text figures, 4 tables. $2.50.

This volume has been badly needed by Southeastern archaeologists for years, for, despite constant use in the literature, the Troyville and Coles Creek complexes have never before been described adequately for comparative purposes. Ford's pioneering sequence of pottery cultures in Louisiana in 1936, consisting of Marksville—Coles Creek—Natchez and Caddo, has now been increased to Tchefuncte — Marksville — Troyville — Coles Creek — Plaquemine — Natchez (historic); and the Caddoan remains are now widely recognized as a distinct cultural problem. Studies of the six periods have appeared in very irregular order in publications by Ford, Willey, and Quimby, in the course of which repeated changes were made in their diagnostic elements and in the content and duration of ceramic types. The Troyville concept was created in part out of the Marksville group but mostly from a temporary "early Coles Creek" classifica-

tion; Plaquemine was later established largely from a "late Coles Creek" horizon, but also from new material found to precede Natchez. While this might seem to have destroyed Coles Creek as a major period, such is far from the case.

Ford's present monograph is not only the largest publication from Louisiana, but it contains many important revisions of pottery types, much valuable regional data incorporated in the type descriptions, and reflects Ford's prodigious labor in striving for greater statistical precision in analyzing large quantities of potsherds. Quimby's study of the Plaquemine period,[1] issued almost simultaneously, should be used in conjunction with it, for it also re-defines pottery types formerly involved in "Coles Creek" and describes new ones. Cotter and Corbett also issued papers in 1951 on the Marksville[2] and Plaquemine[3] periods, bracketing the periods treated by Ford.

Greenhouse is part of the extensive site called "Marksville" by Fowke in 1926. Setzler in 1933 recognized the "Hopewellian" character of pottery and mound construction in part of it. Ford's work is derived from W.P.A. excavations conducted in 1938-39 under the skillful direction of Neitzel and Doran, the concurrent laboratory work by Willey and Quimby, and his own re-evaluations. Fowke's mounds 2 to 6 with their encircling embankment retain the name "Marksville site," while his mounds 14 to 20 are converted to mounds A to G, respectively, of the Greenhouse site. Mounds A, E, and G are rectangular flat-topped structures placed on three sides of a plaza or court; F is a smaller rectangular mound between G and E; and the others are low rises along the terrace edge east of the plaza (Fig. 3).

By means of bore-holes in the terrace and its eastern slopes, Ford was able to make a highly significant correlation of the underlying sediments with Fisk's great study of channel shiftings of the Mississippi, Red, Arkansas, and Ouachita Rivers, all of which at some time came into the vicinity. For comparatively recent times, Fisk's chronology employs 20 stages of meander progression at a presumed average of 100 years per stage, or a total of 2000 years. Ford concludes (1) that neither the Marksville nor the Greenhouse site was occupied before stage 3 (300 A.D.?), but occupation probably did begin then or soon after ;and (2) occupation had ceased before stage 15 (1500 A.D.?) because from then to the present, backed-up flood waters of the Red have deposited fine reddish silts over the site. No mention is made of published radiocarbon dates on the Marksville period, but the river-channel chronology is in essential agreement. Ford remarks that 300 to 1500 A.D. "is a long time interval that leaves plenty of leeway for guessing the actual period of occupation" (p. 19).

Neitzel and Doran's excavation methods and the physical features encountered are next discussed in detail, with exceptionally good diagrammatic profiles. Besides the broad excavated areas in mounds A, C, D, and F, a number of very long stratigraphic trenches were dug across intervening areas. The most complete vertical sections are termed Analysis Units and provide the basis for Ford's frequency bar-charts. Figures 6, 7, 9, 10, and 12 give horizontal post-hole plats for buildings at different levels in mounds A and F. Mound C produced a mass of 93 burials (84 human, 9 dog) with which there were no grave artifacts whatever. The human skeletons were mostly extended but grave pits could not be found; the bodies seemed to have been placed in shallow depressions in an irregular midden surface and earth heaped over them. A possible cremation was included in the grave mass, but "there is considerable doubt that the burning was intentional."

The house floors cleared suggest a temporal change in the shape of buildings when correlated with ceramic changes in the Analysis Units. Thus, the three structures that date before the middle of the Coles Creek period were circular, and the three that date from the middle of Coles Creek into Plaquemine were probably rectangular. Nearly all houses had a basin-shaped fire pit near the center, and two (early to middle Coles Creek) had wall-post trenches (p. 102). A peculiar feature of the site is the occurrence of large bathtub-shaped fire basins in midden areas.

In his ceramic classifications, Ford includes discussions of his methods and attitudes, part of which is directed toward certain recommendations that I published for the Davis site. He feels that there is no advantage in matching sherds to reduce them to the number of actual vessels represented, that this would not differ enough from a straight sherd count to justify the time expended (p. 93). Personally, I do not think this demands as much extra time as Ford and others believe. He also rejects the matter of eliminating plain *body* sherds from the counts (because many of them could belong to the same vessels that are counted in decorated types) with the rather strange remark that this step would only be valid "if the primary object of such a study was to reflect accurately the ancient pottery styles. Fortunately, this is not the case." Instead, the primary object of stratigraphic-frequency studies is "to place cultural features in correct temporal and spatial relation." Yet it is the *frequency shifts* in all his ceramic tabulations which determine his period divisions, many of the types existing through two or more periods but being dominant in only one of them. Changes in other artifact types, houses, burial customs, etc., are only of period significance if they agree with the ceramic frequency shifts. Therefore I fail to see why a reduction of sherds to vessels does

[1] George I. Quimby, *The Medora Site, West Baton Rouge Parish, Louisiana*. Field Museum of Natural History, Anthropological Series, Vol. 24, No. 2, 1951.

[2] John L. Cotter and John M. Corbett, *Archaeology of the Bynum Mounds, Mississippi*. National Park Service, Archaeological Research Series, No. 1. Washington, 1951 (reviewed by Philip Phillips in *American Antiquity*, Vol. 17, No. 4, April 1952; by J. D. Jennings in the *American Journal of Archaeology*, Vol. 56. No. 1, January, 1952).

[3] John L. Cotter, "Stratigraphic and Area Tests at the Emerald and Anna Mound Sites," *American Antiquity*, Vol. 17, pt. 1, pp. 18-32, 1951.

not provide a more accurate view of changing customs, as against counting all the pieces from broken vessels which the archaeologist happens to find — a highly variable set of accidents. Ford's other reason for rejecting the matching method, that it is impractical for sherds from long, narrow trenches where the chances of recovering very many pieces from the same vessels are quite small, seems to me a much sounder one.

At Greenhouse, "decoration and surface finish are relied upon to give the most minute typological separation," a condition partly due to the complete absence of entire vessels from the site (p. 48). The type descriptions are nevertheless accompanied by many splendid drawings derived from large sherds and partial vessels. These types, 23 in number, are grouped under the Troyville, Coles Creek, and Plaquemine periods, according to the time of dominance shown by the numerous bar-charts. With their large amount of comparative and regional information stretching from eastern Texas to Florida, these descriptions will be an indispensable guide for all.

Only 44 projectile points were found, belonging to only three types, for which Ford employs the same names as some of those from the Davis site. Two of these are heavy (dart ?) types: Gary Stemmed and Ellis Stemmed; and one, Alba Barbed, is a small, light (arrow?) type. It is gratifying to see the binomial system for artifacts other than pottery spreading to the Lower Mississippi Valley. Various other artifacts of stone, bone, antler, and clay are described, the most interesting being the occurrence of clay ear spools, elbow pipes, human figurines, and "Poverty Point" baked clay balls; boatstones; plummet stones; bone projectile points; and a stone mortar. Some, at least, must be surviving traits from older periods.

In his general interpretations, Ford concentrates heavily on his position that the Alto focus of eastern Texas[4] cannot be related to any part of the lower Mississippi Valley sequence other than the Plaquemine period (pp. 85, 89, 103, 126-129). Doubtlessly the absence of published details on the later, Fulton aspect period, has caused Ford to use the Gibson aspect units for such a correlation; but there are some inconsistencies in his own arguments. I take this opportunity to offer a brief rebuttal, hitting only the high spots.

1. The radiocarbon date of 400 A.D. ± 175 years on phase 1 of the Alto focus[5] cannot be ignored by Ford and others merely because it is some centuries off the Eastern guess-dates. Even if not entirely accurate, this date makes a temporal alignment with Plaquemine quite impossible to me, particularly since Ford argues (probably correctly) that the Alto focus did not extend over a very long time. Moreover, Phillips[6] has found a surprisingly good agreement between Fisk's channel chronology and the one advanced by me in 1946 by extending Puebloan datings eastward toward the Mississippi Valley. At that time I suggested that Alto focus could be aligned with Troyville and Coles Creek. Phillips and Griffin now feel that Alto can be correlated in time with Coles Creek, while Ford favors the Plaquemine correlation.[7] Now, despite this agreement between the channel chronology and my 1946 scheme, all three of them advance a new scale pushing all the Louisiana periods back from 100 to 300 years: the Plaquemine beginning about 1200 A.D., Coles Creek 850 A.D., Troyville 700 A.D., Marksville 500 A.D. They neither give specific reasons nor mention any radiocarbon datings, but it is probable that they have been influenced by the latter. The Phillips-Ford-Griffin scale of "absolute chronology" is thus considerably closer to my 1949 estimates in the Davis Site monograph than to my 1946 chart, and it probably should follow that they are dissatisfied with Fisk's channel chronology in the same degree, although they do not discuss this point. It should be obvious that no student of Southeastern chronology should bet on any one of these scales until there are more radiocarbon datings and less personal feeling about what constitutes "absolute" chronology.

2. Ford has pointed out a number of apparent similarities in ceramic features between Alto and Plaquemine (see pp. 126-9 and type descriptions). Such traits as fingernail punctating and pinching on jar bodies, and various patterns of parallel incised lines in hachured arrangements, for example, have no great value in temporal alignments for they cover far too much time and territory in the Eastern States. I also distrust the matching of frequency figures for chronological ordering in different areas because it is all too easy to believe that the popularity of specific techniques varied greatly from area to area on the same time level. One positive way to equate two different cultures in time is to demonstrate a trade relationship between them. While I agree with Ford that *Davis Incised* looks much like *Hardy Incised*, etc., the resemblances he cites between Alto and Plaquemine are clearly outweighed by the complete absence in Alto of certain traits of widely recognized chronological significance in the whole region: shell temper, handles, lugs, appliquéd decoration, effigy vessels, vessels with effigy appendages, and brushed surfaces (the brushing Ford refers to in the Alto focus is actually closely-spaced crude incising). There is no evidence whatever of a trade relationship between Alto (or any Gibson aspect focus) and Plaquemine. On the contrary, Ford accepts the identification of two Greenhouse sherds (Pl. 23, A, B and p. 90) as *Crockett Curvilinear Incised* trade pieces in an early Coles Creek level. Further, the traits men-

[4] H. Perry Newell and Alex D. Krieger, *The George C. Davis Site, Cherokee County, Texas*, Society for American Archaeology Memoir 5, 1949.

[5] Alex D. Krieger, "A Radiocarbon Date on the Davis Site," *American Antiquity*, Vol. 17, pp. 144-5, 1951.

[6] Philip Phillips, James A. Ford, and James B. Griffin, *Archaeological Survey in the Lower Mississippi Alluvial Valley, 1940-1947*. Papers of the Peabody Museum, Harvard University, Vol. 25, 1951, pp. 304-5.

[7] *Ibid.*, pp. 454-5.

tioned above *do* appear in several units of the later Fulton aspect, brushing and appliqué being particularly common (along with engraving, incising, and punctating) in the east Texas and northwest Louisiana foci. The Fulton aspect, then, provides a logical and easy correlation with Plaquemine and Natchez although we do not know which came into existence first.

3. Ford mentions carinated bowls, bottles, and engraved decoration as traits appearing at the mouth of Red River only at the end of Coles Creek. They "may have been moving from west to east; in the case of engraving, this is almost certain." Any considerable time lag in eastward diffusion is, however, rejected because "it is almost impossible to visualize the sort of cultural barrier that would have made this condition possible" (p. 127).[8] In the first place the Fulton aspect (perhaps Belcher focus) will serve as well or better as a source for such traits. Second, the "Caddoan" and lower Mississippi Valley areas on the whole gave rise to quite different ceramic traditions; numerous lags in both directions show that there were indeed some cultural barriers to diffusion, and some important techniques were never exchanged at all. Thus, shell tempering never progressed west of the Texas-Louisiana border; cordmarking never entered the "Caddoan" area even as trade ware; check stamping and rocker stamping are represented by a few sherds which must be trade pieces; red-filming was adopted only in the northern foci of Gibson aspect (principally in Sanders focus, slightly in Haley and Spiro), but even in the Fulton aspect it did not spread beyond the northeast corner of Texas; the barrel-shaped vessel with thick "collar," of long life in central Louisiana, never reached as far as Texas; and so on. Thus, a chronological alignment based on frequency shifts and one-for-one matching of traits cannot give a strictly accurate picture. If an absolute chronology can be established some other way, the direction and relative speed of diffusion of different traits can be expressed within a controlled, impersonal framework.

4. An Alto-Plaquemine correlation ignores the presence of rocker-stamped trade sherds at the Davis site, all of which (with the exception mentioned below) fell in phases 2 and 3. Ford agrees that at least one of these is a Troyville type, and as such "must be explained." The best explanation I can think of is in my already published interpretation. To supplement this, a photograph is here presented (Fig. 79) of a sherd which had been mislaid and unfortunately was not included in the Davis site monograph. This was recovered "near the wall of Feature 41" in Square 22L9, depth 20-25 inches below surface. This places it inside feature 41, a circular house outline under mound slopewash and probably belonging to the sub-mound village, phase 1.[9] The sherd is very poorly smoothed, has clay-grit temper, and the rocker bands are nearly one inch wide, overlapping one another. Such broad rockers are sometimes found on Hopewellian pottery in Illinois and Wisconsin,[10] perhaps elsewhere, but the clay temper may rule against a far northern origin.

FIG. 79. Rocker stamped sherd from Davis site, Cherokee County, Texas, previously unpublished.

5. Contemporary local developments and degrees of workmanship may sometimes be confused with a linear chronological ordering. Thus, *Crockett Curvilinear Incised* (Alto), *French Fork Incised* (Troyville and Coles Creek), and *Weeden Island Incised* (northwest Florida) might be regarded as contemporaneous expressions of one fundamental design pattern, *Crockett* just being simpler in design and range of vessel forms. At least, I do not believe that anyone can yet decide which was earliest. *Coles Creek Incised* (present in Troyville as well as Coles Creek period) might be viewed as a localized elaboration of a fairly widespread simple design, *Davis Incised* (Alto) and *Hardy Incised* (Plaquemine) resembling one another mainly because neither is as finely made as the Coles Creek pottery; vessel forms also differ somewhat in the three types.

[8] The Gahagan and Crenshaw mound groups are cited as examples of "Caddoan" sites which should show cultural exchange with Coles Creek if they were approximately contemporaneous. Gahagan is on the Red River about 100 miles northwest of Greenhouse, and Crenshaw 80 or 90 miles farther up, in Arkansas. Clarence H. Webb of Shreveport has in fact found Coles Creek, as well as Bossier and Belcher focus sherds, on the Gahagan site *surface*. Judge Lemley's work at Crenshaw requires a re-examination in view of present problems, for his important data on the "Caddo" graves there has never been published. His "Caddo" graves are of two very distinct types: those sunk through the Coles Creek graves were small, single interments with pottery of the Texarkana and Belcher focus complexes (Fulton aspect); but seven or eight others were huge multiple interments with the skeletons laid in neat rows, quite similar to those with Coles Creek pottery, except that their numerous vessels seem to combine features of the Alto, Gahagan, and Spiro foci. The time relationship of these large-grave complexes has not been established, but Judge Lemley plans to publish his data.

[9] Newell and Krieger, *op. cit.*, Fig. 4, p. 79, and Table 1.

[10] This sherd was examined by Richard S. MacNeish, who remarked on its resemblance to the stamps on Illinois and Wisconsin Hopewellian pottery. A sherd strikingly like it is shown by W. C. McKern in "A Wisconsin Variant of the Hopewell Culture," *Bulletin, Public Museum of Milwaukee*, Vol. 10, No. 2, 1931, Pl. XLIV, fig. 8.

6. Ford's interpretation also fails to consider most of the nonceramic traits discussed in the Davis site report.[11] I still believe that certain similarities in Gahagan, Crenshaw, and Hopewellian burial method are significant, for one thing, and that "Copena points" or blades at Spiro and Gahagan provide a specialized trait linking them with Copena culture. Ford now reports that the three projectile point types found at Greenhouse are the same as three of the several types at Davis. None of these are known to me from any Fulton aspect unit, nor from the Plaquemine period. The change in building shape from circular to rectangular in the Troyville and Coles Creek periods at Greenhouse agrees with the change noted from phase 1 to 2 at Davis. Wall trenches were present in three of the 25 houses possibly belonging to phase 1 at Davis, and appeared in early Coles Creek at Greenhouse. We know practically nothing of the direction of diffusion of building forms and associated traits in the Eastern States. Jones, incidentally, has made a guess-date of 700 A.D. on the appearance of corn of the Eastern Complex at Davis (from an origin in Guatemala), an estimate which happens to agree exactly with that of Phillips, Ford, and Griffin [12] for the beginning of Troyville. Whether by design or accident, this agreement indicates a gradual loosening of chronological attitudes in the Southeast.

In sum, a correlation of Alto focus with Plaquemine seems to me highly unlikely, and the Fulton aspect needs to be considered more fully in relation to Plaquemine. On the other hand, I am unable to decide which of the other possibilities is preferable. Marksville, Troyville, or Coles Creek. The radiocarbon dates and trade sherds support an Alto-Marksville alignment, generally speaking, but perhaps Troyville would be more satisfying if only that it and Alto contain early expressions of temple-mound construction; Coles Creek is also possible, of course, but the best answer will depend upon more rigidly controlled dating in each areal column, such as will be afforded by more radiocarbon datings.

One matter greatly puzzles me. Ford (p. 129) and Phillips, Ford, and Griffin (*op. cit.*, p. 180) have just indicated that Plaquemine and "Mississippi" are synonymous terms in the lower Mississippi Valley region; and that even though there are "early" and "late" Mississippian periods, *both* of these contain shell-tempered pottery. What, then, are Troyville, Coles Creek, and all other temple-mound complexes which lack shell-tempered pottery and many other traits associated with it? One would think that over the years such a term as "Mississippian" as a cultural label would become more and more definite in meaning, but so far as I can make out it is more difficult to understand than ever. I often think that Ford and Willey's 1941 scheme of Burial Mound and Temple Mound stages was the most workable yet devised, at least for the Southeast, yet even they seem to have practically abandoned it for a jumble of other terms. Ford might well have devoted some space to his present position on this broader terminology in the relationships of Greenhouse.

ALEX D. KRIEGER
University of Texas
Austin, Texas

[11] Newell and Krieger, *op. cit.*, pp. 219-24 and 236-7.

[12] Volney H. Jones, in Newell and Krieger, *op. cit.*, p. 246. Phillips, Ford, and Griffin, *op. cit.*, p. 454.

Florentine Codex, General History of the Things of New Spain, Fray Bernardino de Sahagún. Translated from the Aztec into English, with notes and illustrations, by ARTHUR J. O. ANDERSON and CHARLES E. DIBBLE. Published by the School of American Research and the University of Utah. Monographs of The School of American Research, Santa Fe, New Mexico. *Book 1 — The Gods*, Number 14, Part II, 1950, 46 pp., 43 ills.; *Book 2 — The Ceremonies*, Number 14, Part III, 1951, 216 pp., 69 ills. $12.00.

Bernardino de Sahagún, a Franciscan friar active in Mexico 1529-1590, was the earliest systematic practitioner of an ethnographic science based upon communications by native informants. Sahagún's object was to provide Christian ministers with a compendium of native customs. In its final form Sahagún's work embraced twelve books.

The earliest outline of his plan was prepared at Tepeapulco about 1558. It appears to follow Indian thought-patterns in a fourfold division of the material by Gods, upper and nether worlds, political systems, and human affairs. In later elaborations of the outline, Sahagún added some conventional scholastic sections on natural history, on rhetoric, moral philosophy, and history.

Beginning in 1558 Sahagún conversed daily at Tepeapulco with ten or twelve aged natives. He was assisted by four Indian Latinists who he had trained some years before. Each day's discussions were illustrated by the informants in topical drawings, who also dictated commentaries to the assistants in Aztec. The process continued at Tlatelolco after 1560 with another team of eight to ten Indian chiefs, and four or five trilingual (Aztec — Spanish — Latin) Indian assistants.

In 1565-1569 the vast accumulation was rearranged and recopied in Mexico City under Sahagún's direction. In 1570 the Franciscans deprived him of his Indian scribes for reasons of economy, and the great enterprise came to a halt. Sahagún was then over 70. Further disasters dogged the work. No part was published until 1832. The integral text has never been available, excepting in a scarce and incomplete facsimile made public by Francisco del Paso y Troncoso in 1905.

Students have therefore never had access to any complete version. All previous editions, other than the facsimile of 1905, are based on a Spanish translation prepared about 1575-1577 under Sahagún's direction, and included with a profusely illustrated manuscript which ultimately came to rest in Florence at the Laurentian Library. The *Florentine Codex* is written in parallel columns, Spanish and Aztec. The Aztec column is more detailed and less synthetic than the Spanish version. It is likely that the Aztec account remains close to the

actual conversation of Sahagún's Indian informants. The Spanish version is less a "translation" than a generalized commentary upon certain items of information in the Aztec. Chapter I of Book I illustrates the point.

*Spanish**	*Aztec***
First chapter, which tells of the chief god they adored, and to whom the Mexicans sacrificed, called Huitzilopochtli. This god, called Huitzilopochtli, was another Hercules, most robust, of great powers and very warlike, a great destroyer of towns and of peoples. In war he was like live fire and much feared by his enemies: thus the device he bore was a terrifying dragon's head which spouted fire from the mouth. He was also a necromancer or sorcerer, who transformed himself into various birds and beasts. Because of his strength and skill in war the Mexicans honored him greatly when he was alive. After his death they honored him as a god and offered him slaves, sacrificing them in his presence. The more to honor him they sought to keep these slaves robust, and they adorned them with ornaments of earplugs and labrets. There was another god like this in the region of Tlaxcala, called Camaxtli.	First Chapter, which telleth of the highest gods who were worshipped and to whom sacrifices were offered in times past. Humming-bird from the Left (Huitzilopochtli), [was] only a common man, just a man. [He was] a sorcerer, an omen of evil; a madman, a deceiver, a creator of war, a war-lord, an instigator of war. For it was said of him that he brought hunger and plague — that is, war. And when a feast was celebrated [for him], captives were slain; ceremonially bathed slaves were offered up. The merchants bathed them. And he was thus arrayed: he had an ear-pendant of blue cotinga feathers; he had the fire serpent disguise, the blue netted cloth, the arm band. He wore rattles and shells.

* (*Historia General de las Cosas de Nueva España*. Edit. Nueva España, S. A. Mexico, 1946, I, p. 19. Reviewer's translation.)

** (Translation by Anderson and Dibble).

Clearly no student ought to work in Sahagún without consulting both versions, Spanish and Aztec, for they complement more than they repeat one another. Yet most students have been obliged, in the absence of the text of the Aztec column of the *Florentine Codex*, to work with the Spanish alone.

Aztec is a language of high compounding power and of great poetic resources. Drs. Anderson and Dibble have prepared the English translations of the Aztec version of the first two books of the *Florentine Codex* with skill and with insight. The reviewer has a stumbling knowledge of Aztec, entirely inadequate for any philological assessment of the translation. Yet it is clear that the translation is exact and critical in its search for denotative and connotative meanings. The footnotes make full use of the work of Eduard Seler, the German philologist who translated portions of the Aztec version about a generation ago. The footnotes draw as well upon the published works of many contemporaries and followers of Sahagún who were also historians and ethnographers of the Indian tribes of Mexico.

When completed, the translation under review will comprise all twelve books. It will be fully illustrated with the reproductions of the drawings that accompany the *Florentine Codex*. As the translators relate in the "Temporary Preface" to their first two volumes, the project was initiated by the late Dr. E. L. Hewett and continued by Dr. S. G. Morley. The latter brought together Drs. Anderson and Dibble to work on the microfilm copies at the School of American Research in Santa Fe.

The *Florentine Codex* is but one element in the corpus of manuscripts left by Sahagún. A complete Sahagún translation will ultimately include the material in earlier recensions. These manuscripts are today in Madrid, at the Academia de Historia and the Biblioteca del Real Palacio. Like the *Florentine Codex*, these manuscripts were reproduced in part in the facsimiles edited by F. del Paso y Troncoso. Only fragments have been translated. They antedate the *Florentine Codex*, and they are the rough materials of Sahagún's prolonged work with native informants. One of the final tasks of Sahagún scholarship will be to unravel the various ethnic traditions that flowed together from the natives into the unclear stream of Sahagún's compilation. The present translations mark a great advance: without them one of the main sources of knowledge concerning ancient Mexico was blocked.

George Kubler
Yale University

The Maya Chontal Indians of Acalan-Tixchel: a contribution to the history and ethnography of the Yucatan Peninsula, by France V. Scholes and Ralph L. Roys (with the assistance of Eleanor B. Adams and Robert S. Chamberlain). Publication 560, Carnegie Institution of Washington, 1948.

In the Introduction (Ch. 1), it is noted that historical legends and the Spanish descriptions of native customs constitute an important supplement to the archaeological evidence of the old Maya regions. At the time of the Spanish conquest the peninsula of Yucatan and the adjoining lands along the coast of the Gulf of Mexico and the Caribbean sea were united by commercial relations. "Yucatan had what almost amounted to a monopoly of salt production and also made a specialty of exporting cotton cloth and slaves to her neighbors. In exchange, cacao, obsidian, copper, gold, feathers, and many other articles of luxury were imported from Tabasco and the Caribbean coast to the southeast. Merchants from Xicalango and Potonchan in Tabasco and

from Champoton and Campeche in southwestern Yucatan visited the island of Cozumel and had warehouses and factors on the Ulua River in Honduras" (p. 3). This trade was facilitated by the similarity of most of the languages spoken over this large area.

Chapter 2 of this work provides a linguistic and ethnographic background for the Chontal of Tabasco and neighboring Indian groups. Chapter 3 is devoted to an analysis of political, religious, economic, and social conditions in Acalan at the time of the conquest. In Chapter 4, the writers present their interpretation of the aboriginal history of Acalan.

The two succeeding chapters (5 and 6) describe the coming of the Spaniards, dealing especially with the expeditions of Cortes and Alonso de Avila (1530). Chapter 7 gives the encomienda history of Acalan, the introduction of Christianity, and reasons for the decline of the province in the first quarter-century after the visit of Cortes. Next (Chs. 8 and 9), the removal of the Acalan people to Tixchel is discussed, and the pacification of Zapotitlan. Chapters 10-13 concern the activities of certain individuals, such as Don Pablo Paxbolon, missions, and the decline of Tixchel. The final chapter (14) gives a general review and the conclusions of the authors. Then follow five important appendices with facsimiles of the Chontal text. There is also a glossary of terms used, list of references, and an extensive index. The complete work comprises 565 pages. There are four maps, one of Tabasco in 1579, the others, modern works pertinent to this study.

The present work draws upon new documentary material derived from the Archivo General de Indias in Seville, in addition to accounts previously known, which has made it possible to locate the Acalan lands and to reconstruct the history of that province from preconquest times to the seventeenth century. Earlier, erroneous interpretations are corrected, and the fact is established that the Chontal Acalan occupied the large basin of the upper Candelaria and its tributaries. The province of Acalan ("the place of the canoes") was a region apart, "not only an independent state but [it] was so separated from Tabasco by forests and swamps that the Spaniards considered it to be a part of Yucatan" (p. 48). Seventy-six towns and villages were occupied. Acalan dominated the Candelaria drainage, and its merchants "occupied one entire ward of the town of Nito, an important commercial center near the mouth of the Rio Dulce in Guatemala. In the west they maintained extensive trade with Xicalango, Potonchan, and other parts of Tabasco. Within Acalan the merchants constituted the dominant class, and the wealthiest of them, a lord named Paxbolonacha, was the supreme ruler of the entire cacicazgo [province]" (p. 4).

Hernan Cortes conducted the first Spaniards into Acalan in 1525, during his march to Honduras. He described Itzamkanac, the Acalan capital, as a rich and flourishing town with many temples.

Xicalango, say the authors, "was probably situated at the site locally known as Cerillos near Lake Atasta, a short distance west of Laguna de Terminos" (p. 27). It was the vantage point for commercial routes to Yucatan, Acalan, and the Usumacinta valley.

There were two other important commercial centers, besides Xicalango, in Tabasco proper, Cimatan and Potonchan. The last named was Chontal-speaking, but the other two were either wholly or partly Nahuatl-speaking. The authors say: "We find some indication that the Nahuatl-speaking peoples who settled among the Chontal of Tabasco, as well as those who left evidence of a Mexican culture in northern Yucatan, came from the Gulf slope of southern Veracruz or the adjacent part of Tabasco west of the Maya area" (p. 22). They note the older, Olmeca features in the area, and indicate that Toltec influence reached from Tula [Hidalgo] to Yucatan, where it is particularly recognizable at Chichen Itza. Expeditions of Aztec merchants traveled to Cimatan and Xicalango, and it is to be presumed that their predecessors, e.g., the Toltecs and others, followed the same routes.

Cimatan ("the three Cimatans," actually) was located on the Grijalva a short distance below the junction with the Rio de Dos Bocas. This was a strategic region, the first encountered by merchants from the Valley of Mexico. Travel in Tabasco was mostly by water. Certain Zoque towns, to the southwest of the Chontal area, were subject to Cimatan, which controlled the most important trade routes from the highlands of Chiapas as well as that from the Valley of Mexico. In the Zoque country, maize, chile, cotton (fine fabrics), cochineal, and honey were produced, and yellow topaz was mined. Potanchan was situated near the mouth of the Grijalva river.

For the first time, this publication reveals something as to the political and social organization of this significant branch of the lowland Maya. Resemblances are found to the Yucatecan Maya and to Mexican peoples; however, the strong Acalan tendency toward matrilocal residence, which seems characteristic of neither of the other groups mentioned, remains somewhat of a problem. "The place names of Acalan were all Chontal, but the personal names of more than one-third of the population were Nahuatl. In Tabasco almost all of the place names and all the personal names were Mexican; and in Yucatan none of the place names and only a sprinkling of the personal names were of Nahuatl origin. Mexican influence was evident in all three areas, but was strongest in Tabasco, somewhat less in Acalan, still more attenuated in Yucatan" (p. 318).

After the coming of the Spaniards, conditions inevitably began to change in Acalan. Native trade gradually fell off and European diseases took a tremendous toll. The disturbed economy and the ravages of disease resulted in a rapid diminution of the Acalan population. In 1556 plans were made to remove the then remaining Indians to a new location, a less isolated place. The transfer was effected by one of the Spanish friars, Fray Diego de Pesquera. The site chosen was Tixchel, on the Estero de Sabancuy, which empties into the north-

east corner of Laguna de Terminos, thus on the route of canoe travel from Tabasco to Yucatan, which would be visited frequently by officials, traders, and clergy traveling back and forth between the areas. After 1571-73, the Candelaria country had no importance; thereafter, the Tixchel district was the center of activity for the history of the Acalan Chontal. The destruction of Tixchel, sometime between 1639 and 1643, and the ravages of disease in 1648, "marked the first stages of the rapid decline of the entire Tixchel district that continued throughout the remainder of the seventeenth century. In later years, however, the major cause of decline was increasing chaos on the southwestern frontiers of Yucatan due to oppression by the Spaniards, corsair raids, and the growing power and influence of the fugitive settlements in the interior of the peninsula" (p. 305).

This study, utilizing relevant data — archaeological, legendary, and documentary — gives us an important publication which will benefit investigators of divers interests. The authors find their work to emphasize more than ever the importance of considering Middle America as a whole in the study of any particular phase of its culture.

Bertha P. Dutton
Museum of New Mexico
Santa Fe, New Mexico

Investigaciones Arqueologicas en el Departamento del Magdalena 1946-1950. Partes I, II. Gerardo y Alicia Reichel-Dolmatoff. Boletin de Arqueologia, Vol. 3, Nos. 1-6, Instituto Etnologico Nacional, Bogota, Colombia, 1951. 334 pages, 36 plates.

Except for J. Alden Mason's pioneering studies (*Archaeology of Santa Marta: The Tairona Culture*. Field Museum of Natural History, Anthrop. Series, Vol. 10, Nos. 1, 2, 3. Chicago, 1931, 1936, 1939), archaeological literature for the Department of Magdalena, northern Colombia, is sadly wanting. This report, by a husband-wife archaeological team, is a large step in the direction of filling this void. The field studies were made during the years 1946-1950 while the senior author was Director of the Ethnological Institute of Magdalena in Santa Marta.

After extensive reconnaissance and digging in selected sites, the authors recognize five archaeological areas, namely; Litoral, Sierra Nevada, Lower Magdalena River, Rancheria River and Cesar River. These center roughly about the Sierra Nevada of Santa Marta and take in the Guajira Peninsula to the Venezuelan border and the country southward up the Magdalena River Valley.

This report treats of two of these archaeological zones, Rancheria and Cesar rivers; the others are to be covered in subsequent studies. Each of these zones is considered separately, the factual data being given site by site, in such a way that site comparisons can be made without difficulty by anyone interested. The bases for establishing zonal differences in the local archaeology thus are made much clearer than had this procedure not been followed.

The chief products of the excavations were potsherds, some 80,000, with a minimal amount of other material culture. This means that the authors had to rely heavily on ceramic complexes and sequences from which to draw conclusions. Fortunately, good though not ideal stratigraphic conditions were encountered in a number of sites where refuse was up to two meters in depth, and the results, on the whole, complement each other. The volume sets a laudable standard for Colombian archaeology and is a distinct recognition of the worth of house and refuse digging, as opposed to burial and tomb excavation which thus far has been given so much attention. All credit must be given the authors for having made the first concrete contributions to chronology building in northern Colombia by the stratigraphic approach. At the same time they recognize that their efforts are merely a beginning and must await corroboration.

In the Rancheria River area, the detected cultural differences, from early to late, were labelled as La Loma, El Horno, and Portacelli. This sequence is essentially valid for the Cesar zone also, except for the addition of a new complex, Hatico, which constituted something of a transition between El Horno and Portacelli and is regarded as representing an influence from the south. Excavations in a funerary cave near La Paz produced material which, on typological grounds only, is suggested as being older than La Loma. This is significant chiefly as an indication of the historical potential of the area.

Rather than to review in detail the elements upon which these distinctions rest, something the interested student can do for himself, a few general aspects of the work may be noted. The authors do not commit themselves as to the length of time represented by this material, nor do they discuss at length extra-cultural problems. These aspects no doubt will be presented more fully later.

The general position in the calendar of the Rancheria sites is given as pre-Spanish, determined by cross-dating in this way: the youngest horizon shows certain correspondences with the oldest known sites in the adjacent Sierra Nevada area, and these are antecedent to sites in which Spanish contact material has been found. An advance of knowledge of this kind may well be the beginning of the framework which will eventually bring order to Colombian prehistory.

This study displays a sensitiveness to ecological changes which have reduced once populous areas to the dreary valleys of today, explainable possibly by man's own abuse of his natural resources. Also some space is given (pp. 198-208) to cultural interpretation which should prove valuable in connection with the senior author's ethnological studies in the Sierra Nevada.

A distinguishing characteristic of this report is the systematic analysis and presentation of the data. Stratigraphic cuts are presented by levels and ceramic traits are recorded numerically and percentage-wise. The binomial method of labelling pottery types is followed and

type descriptions appear adequate and are easily followed. A foresighted addition is a brief English summary at the beginning. The table of contents occupies a somewhat unorthodox position at the end of the volume.

All in all, Mr. and Mrs. Reichel-Dolmatoff have made a most noteworthy contribution to Colombian archaeology, not only for the factual content and historical significance of their study but by demonstrating that grubbing in unspectacular remains pays large dividends. Their reports on the other archaeological areas of northern Colombia will be awaited with real interest.

Emil W. Haury
University of Arizona
Tucson, Arizona

BOOK NOTICES

The Wheeler Site: A 3,500 Year-old Culture in Dallas County, Texas. Wilson W. Crook, Jr., Field and Laboratory, Vol. XX, pp. 43-65, 3 figs., 6 pls. Southern Methodist University Press, Dallas, Texas, 1952.

This is the first detailed report on a buried non-ceramic artifact complex in north-central Texas. The site represents a single occupation, about five feet beneath the present surface of the first terrace (30 feet above the present channel) of the Elm Fork of the Trinity River, near Carrollton, Texas. It is interpreted in terms of the terrace system and valley fills in this area, which have not been adequately studied before for post-glacial times.

That the artifact complex has some relationship to relatively ancient horizons elsewhere is shown by the occurrence of two projectile points resembling the Plainview type; the other points are stemmed with shoulders weakly to strongly developed. Side and end scrapers, plano-convex gouges, and hammerstones also indicate that the Wheeler site is intermediate between early post-glacial and the ceramic horizons. Although the term is not used herein, it is the author's intention to establish a "Carrollton" focus here as one of several foci in the hitherto rather undefined Archaic material of north and northeast Texas.

Crook believes that a close relationship exists between this focus and the Round Rock and Clear Fork foci of central Texas. He places it within the same "Balcones Phase," a term coined by Kelley for central and western Texas but never defined elsewhere. Such usage will be confusing even though the terms may be taken roughly to indicate certain time periods.

The 3,500 year dating is based on the author's belief that the five feet of overburden was deposited by a single flood, and that this flood occurred with the onset of sub-glacial climate at the beginning of what Antevs has called the "Little Pluvial." In chart I, radiocarbon datings on seven widely scattered sites in North America are summarized, all of them close to 3,500 years in age. While it is possible that the Wheeler site is coeval with these others, such a definite solution in a terrace correlation problem is not easily made and will be subject to question. It is also doubtful that any single flood can be assigned to the beginning of the "Little Pluvial," or that an alluvial deposit can be assumed to have been caused by an onset of wet climate without study of the whole drainage system.

Whatever the age of the Carrollton focus turns out to be, the author is to be commended. This paper is certainly a valuable contribution to our knowledge of preceramic complexes in Texas and in the southern Plains region in general. The artifacts should be compared with others over a much wider area and in more detail before they themselves can be used for terrace correlations.

Alex D. Krieger
University of Texas

The California Indians. A Source Book. Compiled and edited by R. F. Heizer and M. A. Whipple. University of California Press, Berkeley and Los Angeles, 1951.

To those of us who are especially interested in this subject, *The California Indians* is a real treasure. Not since Kroeber's *Handbook of California Indians*, now unhappily out of print, has there been so much of value combined in a single volume.

Here, between one pair of covers, the compilers have assembled a large number of articles bearing on many divisions of the main theme. There are 6 on "General Surveys" of California native cultures; 10 on "Archeology"; 10 on "Material Culture"; 17 on "Social Culture" and in addition 4 eyewitness accounts by early travellers from 1775 to 1851. Of the 47 articles, 11, we are glad to state, are by A. L. Kroeber, with Dr. Kroeber as co-author in 2 additional instances. There are 3 by E. W. Gifford, who is also co-author in one case; 3 by S. F. Cook, 2 by R. B. Dixon and 2 by T. T. Waterman.

The galaxy of other authors with one contribution or co-authorship is really imposing — S. A. Barrett, D. P. Barrows, R. K. Beardsley, Cora Du Bois, R. Essene, F. Fenenga, G. Foster, W. Goldschmidt, R. F. Heizer, N. C. Nelson, S. S. Newman, R. H. Olson, L. M. O'Neale, Stephen Powers, G. H. H. Redding, F. H. H. Roberts, Jr., P. Schumacher, R. Spott, K. M. Stewart, A. E. Treganza, and W. J. Wallace. The early travellers whose impressions are recorded are Pedro Font, Pedro Fages and José Espinosa, plus an account by Carl Meyer at a later period. The volume is truly a source book.

The chief defects apparent to the present reviewer are two — a paucity of illustrations, and the fact that the volume does not really cover the whole field as did

Kroeber's *Handbook*, although it does contain, of course, a mass of information that was not available when the *Handbook* was written.

M. R. HARRINGTON
Southwest Museum

Mammals found at the Awatovi Site (Part I) and *Post-cranial skeletal characters of Deer, Pronghorn, and Sheep-Goat with notes on Bos and Bison* (Part II). BARBARA LAWRENCE. (Reports of the Awatovi Expedition, Peabody Museum, Report No. 4.) Papers of the Peabody Museum of American Archaeology and Ethnology, Harvard University, Vol. XXXV — No. 3, Cambridge, Massachusetts, 1951. vii 43 pp., 20 illustrations.

Miss Lawrence has given in Part I a short description of the condition and general abundance of mammal bones from the Awatovi site together with a list of mammalian species identified from this ruin. This part of the report is a general statement and, as J. O. Brew mentions in the preface, the real information will be buried in the text of subsequent reports. It is unfortunate that no information has been furnished the reader in regard to the relative abundance of mammal bones as compared to the bones of other animal orders. Although this paper is admittedly intended to deal only with mammalian remains, a simple statement of the quantitative relationships of mammalian remains to the total bone sample would have been of interest to those of us who deal with food habits of primitive peoples.

Included also in this section is a discussion of Canid remains from that area with a speculation on the causes of occasional recurrences of conspicuously different forms. The author comments on certain phases of William Haag's paper and questions some of the statistical treatment he gave to the data.

In Part II Miss Lawrence discusses a problem commonly met by archaeologists, i.e., obtaining identifications of faunal material from archaeological sites upon which they are working. Since it is the desire of most mammalogists to be relieved of archaeozoological determinations due to limitations of their time and interest for such problems, the author suggests that the great bulk of bones from a site should be identified before an expert is called in. She lists certain categories of bones which should be retained for examination by the expert. This section has been prepared especially with those in mind who must work with ungulate remains and particularly for those who have access to a minimum of comparative specimens. Dr. Lawrence has presented here by means of well executed drawings and descriptions, the important diagnostic differences between various parts of the post-cranial skeletons of ungulates found in the Southwest.

This valuable section fills a long-felt need and provides the means whereby a careful although relatively untrained observer can, with the aid of available comparative specimens, separate many of the bones belonging to this difficult area of archaeozoological determinations.

WILLIAM R. ADAMS
Laboratory of Comparative Osteology
Bloomington, Indiana

ANNUAL MEETING
OF THE SOCIETY FOR AMERICAN ARCHAEOLOGY, 1952

The seventeenth annual meeting of the Society for American Archaeology was held on Thursday, Friday, and Saturday, May 1, 2, and 3, 1952 at the Ohio State Museum, Columbus, Ohio. This meeting was held in conjunction with the twenty-eighth annual meeting of the Central States Anthropological Society. Attendance at the joint meetings exceeded 115 persons.

MEETING OF THE EXECUTIVE COMMITTEE

As required by Article VI, Section 3 of the Constitution of the Society, the annual meeting of the Executive Committee was held prior to the annual business meeting of the Society. An account of the meeting of the Executive Committee is included in the report of the Secretary.

ANNUAL BUSINESS MEETING

The annual business meeting of the Society was called to order by President James B. Griffin at 4:15 p.m. on Saturday, May 4, 1952. Approximately 35 members were present.

The minutes of the sixteenth annual meeting were approved as published in *American Antiquity*, Vol. 17, No. 2, pp. 169-173 (October, 1951).

The report of the Acting Secretary was read and accepted (see p. 186 for this report).

The report of the Treasurer was read by John L. Champe, acting for Treasurer George F. Will, and accepted on the recommendation of the Auditing Committee (John L. Champe, Chairman, and Glenn A. Black).

The 1952-1953 Budget as approved by the Executive Committee was presented for the information of the membership (see p. 187 for a statement of the Budget).

The report of the Elections Committee was read by the Chairman, Albert C. Spaulding, and accepted. The results of the balloting by mail and the ballots collected at the Annual Business meeting (252 ballots received) were as follows:

President: Irving Rouse
First Vice President: Henry B. Collins, Jr.
Second Vice President: James A. Ford
Members of the Executive Committee: Alfred Kidder II (to 1954), Frank H. H. Roberts, Jr. (to 1954).

The report of the Editor was read and accepted (see p. 188 for this report).

The report of the Viking Fund Award Committee was presented by James B. Griffin, who announced that the Committee had selected Dr. Frank H. H. Roberts, Jr., to be the 1951 Viking Fund Medalist.

Two invitations for the 1953 annual meeting of the Society for American Archaeology were received. The first was presented by James B. Griffin on behalf of John C. McGregor for the University of Illinois at Urbana. The second was for Washington University in St. Louis, Missouri, and was presented by P. F. Titterington. The invitations were referred to the Executive Committee for decision.

It was moved, seconded, and approved by unanimous voice vote that Article II, Section 4 of the By-Laws be amended to read as follows:

> Voting shall be by mail ballot distributed to the membership by the Secretary at least 30 days in advance of the Annual Meeting. The result of the election will be announced by the Elections Committee at the Annual Meeting. The candidate for an office receiving the highest number of votes shall be declared elected to that office. In the event of a tie vote, the Elections Committee shall hold a run-off election at the Annual Meeting.

The President described the plans for the 1953 membership drive which were formulated by the Executive Committee and urged the cooperation of the membership in the drive.

The President announced that the Planning Committee had been dismissed by the Executive Committee as a result of the organization and operation of the River Basin Surveys in connection with the archaeological salvage problem. The unexpended funds of the Planning Committee were assigned to the membership drive.

The President suggested that regional meetings of the Society for American Archaeology be held in conjunction with the 1952 meetings of the American Anthropological Association in Philadelphia and the American Association for the Advancement of Science in St. Louis.

The President suggested that a representative be appointed to investigate the possibility of affiliation with the American Association for the Advancement of Science, the American Council of Learned Societies, and other organizations of similar type.

The following resolutions were presented by the Committee on Resolutions (Douglas S. Byers, Chairman):

> *Resolved*: That the Society for American Archaeology express its appreciation and sincere thanks to Erwin Zepp and the staff of the Ohio State Museum for their hospitality and for making available the facilities of the Museum.

> *Resolved*: That the Society express its thanks to Mr. Raymond S. Baby as the Committee on Local Arrangements for so ably anticipating the needs of the Society.

> *Resolved*: That the Society express its appreciation and thanks to Dr. Richard B. Woodbury for heeding wishes for a program covering three days, for a symposium, and for a session centered around one theme, reconciling them, and producing an informative, instructive, and absorbing program.

> *Resolved*: That the Society express its deep sense of loss in the death of Charles R. Keyes, Alice L. L. Ferguson, and Howard Torrey and that the Secretary be instructed to convey to their survivors the sympathy of the Society and to send them a copy of this resolution.

The annual business meeting adjourned at 5:15 p.m.

ANNUAL DINNER

The annual dinner of the Society for American Archaeology and the Central States Branch of the American Anthropological Association was held in the Franklin Room of Student Union, Ohio State University at 6:30 p.m. on Friday, May 2. After the dinner an illustrated lecture, "Danger Cave, Utah: A Preliminary Statement," was given by Jesse D. Jennings in the auditorium of the Ohio State Museum.

OTHER SESSIONS

Thursday, May 1 — Afternoon Session. H. C. Shetrone, presiding. Welcome by Mr. Erwin C. Zepp, Director of the Ohio State Museum.

1. Maps Drawn by North American Indians. DELF NORONA.
2. Bone Pathology from West Central Illinois. P. F. TITTERINGTON.
3. The Cultural Relationships of the Talking Crow Site. CARLYLE S. SMITH.
4. Aspects of a Coordinated River Basin Salvage Program. JOHN L. COTTER.
5. An Archaeological Expression of a Natchez Type Funeral Ceremony. WILLIAM H. SEARS.
6. A Methodological Approach to the Organization of Sherd Laboratories to Facilitate Research in Ceramics. STEPHEN F. BORHEGYI.

Friday, May 2 — Morning Session. John Witthoft, presiding. Roundtable on the Paleo-Indian and Archaic of the Eastern and Arctic Regions of North America. Discussants: Irving Rouse and John Cotter.

1. Paleo-Indian Industries in Western Canada. RICHARD S. MACNEISH.
2. The Lithic Industries of Killarney, Ontario. EMERSON F. GREENMAN.
3. Archaeological Reconnaissance Along the Alaskan Highway in Southwestern Yukon. FREDERICK JOHNSON.
4. The Cultural Sequence at Ellsworth Falls, Maine. DOUGLAS S. BYERS.
5. A Probable Paleo-Indian Site in Vermont. WILLIAM A. RITCHIE.
6. The Enterline Chert Industry in Pennsylvania. JOHN WITTHOFT.
7. Paleo-Indian and Archaic Archaeology of Piedmont North Carolina. JOFFRE COE.
8. Fluted Point and Laurentian Horizons in Ohio. ARTHUR G. SMITH.
9. Fluted Points and Archaic Relationships in the Midwest. AMOS R. GREEN.
10. West Virginia Archaic Sites. WILLIAM J. MAYER-OAKES.

Afternoon Session. William J. Mayer-Oakes, presiding. Roundtable on the Archaeology of the Ohio Valley and Its Relation to Adjacent Regions.

1. An Application of the Rouse Method of Cultural Analysis in the Illinois Area. MELVIN L. FOWLER.
2. Tumuli in Northwestern Pennsylvania. EDMUND S. CARPENTER.
3. Hopewell Cremations. RAYMOND S. BABY.
4. The Westfield Site: A Key to Prehistoric Iroquois in Western New York. ALFRED K. GUTHE.
5. The New Madrid Focus, Missouri: Its Nature and Distribution. STEPHEN WILLIAMS.
6. The Late Prehistoric in the Upper Ohio Valley. WILLIAM J. MAYER-OAKES.
7. Newcomerstown, Capital of the Delawares in the Upper Ohio Valley. DELF NORONA.
8. Ohio Valley Trade Goods. JOHN WITTHOFT.
9. Style Analysis of Hopewell Art. ROBERT MYRON.

Panel Discussion

1. New York-Ohio Valley Relationships. WILLIAM A. RITCHIE.
2. Ohio Culture Sequence. R. G. MORGAN.
3. Ohio Valley Ethno-Archaeology. J. JOE BAUXAR.

Saturday, May 3 — Morning Session. James B. Griffin, presiding. Roundtable on Radiocarbon Dating: Reports on the current status of Laboratories and research programs at the following institutions:

1. University of Chicago, by JAMES R. ARNOLD, Institute for Nuclear Studies, University of Chicago.
2. University of Michigan, by H. R. CRANE, Randall Laboratory of Physics, University of Michigan.
3. University of Pennsylvania, by ELIZABETH K. RALPH, Morgan Laboratory of Physics, University of Pennsylvania.
4. Yale University, by EDWARD S. DEEVEY, JR., Director, Yale University Geochronometric Laboratory.
5. Columbia University, by J. LAURENCE KULP, Lamont Geological Observatory.

Panel Discussion of Radiocarbon dates and archaeological interpretations in various American areas:

1. Early Man. FRANK H. H. ROBERTS, JR.
2. South America. JUNIUS BIRD.
3. Mesoamerica. ROBERT WAUCHOPE.
4. Southwest. ERIK K. REED.
5. Pacific Coast. L. S. CRESSMAN.
6. Southeast. WILLIAM S. WEBB.
7. Northeast. WILLIAM A. RITCHIE.
8. Arctic. HENRY B. COLLINS.

Afternoon Session. Richard B. Woodbury, presiding.

1. The Cohonina Culture of Northern Arizona. JOHN C. MCGREGOR.
2. Joseph Smith, Mormon Prophet, and American Archaeology. THOMAS STUART FERGUSON.
3. Archaeology of the Julimes-Falomir Section of the Middle Rio Conchos, Chihuahua, Mexico. J. CHARLES KELLEY.
4. The Ceramics of Palenque, Chiapas, Mexico. ROBERT L. RANDS.
5. A Maya Graphical Calendar Correlation. ROBERT H. MERRILL.
6. Recent Developments in the History of North American Agriculture. V. H. JONES.

Sunday, May 4. Tour of archaeological sites in the vicinity of Columbus.

REPORT OF THE SECRETARY

Personnel. On November 27 the Secretary, George I. Quimby, informed the President that it would be necessary to appoint a substitute Secretary because of his plans for an extended trip to Norway and suggested Albert C. Spaulding as a substitute. Quimby's suggestion was accepted and the Secretary's files were transferred to Ann Arbor.

Committees. The following committees were appointed by President James B. Griffin and approved by the Ex-

ecutive Committee as required by the Constitution and By-Laws of the Society.

Nominating Committee: Donald Collier, Chairman; F. M. Setzler; and Gordon Ekholm.

Viking Fund Award Committee: James B. Griffin, Chairman Ex Officio; W. G. Haag; J. L. Giddings; John Witthoft; Lloyd Wilford; P. C. Orr; E. B. Sayles; John L. Champe; Linton Satterthwaite; Clifford Evans; H. Marie Wormington.

Program Committee: Richard Woodbury, Chairman; and William Mayer-Oakes.

Elections Committee: Albert C. Spaulding, Chairman; Frederick R. Matson; and Melvin Fowler.

Auditing Committee: John L. Champe and Glenn A. Black.

Committee on Local Arrangements for Seventeenth Annual Meeting: Raymond S. Baby.

Committee on Resolutions: Douglas Byers, Chairman; Thorne Deuel; and Charles Steen.

Other Activities. Special meetings of the Society for non-business purposes were held in conjunction with the annual meeting of the American Anthropological Association in Chicago in November, 1951, and the annual meeting of Section H of the American Association for the Advancement of Science in Philadelphia in December, 1951.

The President appointed Froelich G. Rainey as representative of the Society to the 1951 meeting of the American Association for the Advancement of Science and George I. Quimby as representative of the Society to the 1951 meeting of the American Anthropological Association.

The Executive Committee decided to hold the 1952 Annual Meeting at Columbus, Ohio on May 1, 2, and 3. The three day program is an innovation.

The Nominating Committee presented the following names for the consideration of the members: for President — John L. Champe, Thorne Deuel, Irving Rouse; for First Vice President — Henry B. Collins Jr.; Philip Phillips, Robert Wauchope; for Second Vice President — George W. Brainerd, James A. Ford, Robert F. Heizer; for Secretary — James B. Griffin; for Membership on the Executive Committee — Glenn A. Black, Clifford Evans, Jr., Alfred Kidder II, William A. Ritchie, Frank H. H. Roberts, Jr., Carlyle S. Smith. These nominations were circulated to the membership on February 16, 1952 as required by the Constitution. There being no additional nominations from the membership, a mail ballot was prepared and distributed.

A notice of the place and date of the annual meeting and an invitation for papers was mailed to the membership on October 15, 1951. The program of the meeting was mailed to the membership in the first week of April.

The Executive Committee accepted tentatively the 1952-1953 budget as presented by the Treasurer.

The Executive Committee dismissed the Planning Committee and assigned the sum of $972.19, allocated in the General Fund to the Planning Committee, to the membership drive to be expended over a period of two years.

The Executive Committee approved a plan to conduct a membership drive through regional chairmen with coordination of activities by the Secretary.

The Executive Committee accepted the reports of the Editor and Acting Secretary.

The Secretary's office through the year maintained the membership files as indicated by the Treasurer, answered queries regarding membership, and prepared and mailed the various announcements and the ballot for the election of officers.

Respectfully submitted,
ALBERT C. SPAULDING
Acting Secretary

REPORT OF THE TREASURER FOR THE FISCAL YEAR ENDING APRIL 30, 1952

ACCOUNT OF MEMBERSHIP

During the fiscal year May 1, 1951 through April 30, 1952 the total membership increased from 927 to 1050.

	Active	*Institutional*	*Life*
May 1, 1951	699	217	11
Net Increase	110	13	0
Total	809	230	11
Grand Total	1050		

There are eight complimentary and exchange members. None of these are included in above totals.

BUDGET FOR 1952-1953

ESTIMATED EXPENSE

Publishing AMERICAN ANTIQUITY and Memoirs		$6,600.00
Planning Committee Account		972.19
Editor's Assistance	$600.00	
Editor's Secretary	100.00	
Editor's Expenses	100.00	
President's Expenses	25.00	825.00
Treasurer's Assistance	180.00	
Postage and Express	50.00	
Printing and Stationery	97.65	
Exchange	10.00	337.65
Estimated Expenditures		$8,734.84

ESTIMATE OF INCOME

Estimated Balance Forward		
WORKING FUND	$802.32	
PLANNING COMMITTEE	972.19	$1,774.51
Estimated Income from dues:		
834 at $6.00		5,004.00
Sale of AMERICAN ANTIQUITY		500.00
Estimated Payments by Authors		800.00
Collections on Accounts		231.33
Other Sundry Sales and Receipts		425.00
Estimated Receipts and Opening Balance		$8,734.84

REPORT OF TREASURER
1951-1952

Permanent Fund		
Balance forward May 1, 1951 Prior Report	$ 627.65	
Interest Added before Transfer to New Treasurer's Account	3.13	
Balance as Transferred		$ 630.78
Interest September 30, 1951	$ 1.57	
March 31, 1952	4.74	6.31
Balance in Account April 24, 1952		$ 637.09
Publication Fund		
Balance forward, May 1, 1951 Prior Report	$2,435.75	
Interest Added before Transfer to New Treasurer's Account	10.67	
Balance Transferred		$2,446.42
Transfer from General Fund	$ 4.00	
Interest September 30, 1951	6.11	
Interest March 31, 1952	18.42	28.53
Total		$2,474.95
Less: Transfer to General Fund		900.00
Balance in Account April 24, 1952		$1,574.95

BALANCE SHEET
APRIL 24, 1952

ASSETS

Current Assets		
Cash in Bank — General Fund	$802.32	
Cash in Bank — Planning Committee	972.19	$1,774.51
Publication Fund — Savings Account		1,574.95
Permanent Fund — Savings Account		637.09
Estimated Accounts Receiveable		231.30
		$4,217.85

LIABILITIES

Secretarial Expenses	$ 40.00	
Prepaid Dues	102.00	$ 142.00
Restricted Funds		
Cash in Checking Account Reserved for Planning Committee	$972.19	
Permanent Fund — Savings	637.09	1,609.28
Net Worth		2,466.57
		$4,217.85

STATEMENT OF RECEIPTS
1951-1952

Received Prepaid Dues	$ 102.00	
Received Current and Prior Years	4,950.50	
Total Dues Received		$5,052.50
Reimbursement to the Society by authors for reprint orders	$ 257.10	
Excess Engraving Charge	163.84	420.94
Copies of Memoir No. 8		431.07
Contribution — Kenneth Pfirman		4.00
Sale of Memoirs and AMERICAN ANTIQUITY		426.54
All Other Sundry Receipts and Sales		664.98
Total Receipts		$7,000.03
Opening Balance Brought Forward		
Per Prior Report 4-30-51	$1,581.93	
Increase Prior to Transfer	24.00	
Total Opening Balance Deposited 5-19-51		1,605.93
Transfer from Publication Fund Savings Account		900.00
Total Receipts Deposited		$9,505.96
Total Expenditures		7,731.43
Balance per Bank Reconcilement April 24, 1952		$1,774.53
Recapitulation		
General Operating Balance	$ 802.32	
Planning Committee Fund	972.19	
Total As Above		$1,774.51

STATEMENT OF EXPENDITURES
1951-1952

Publishing AMERICAN ANTIQUITY and Other Printing:		
Printing		$6,754.80
Editor's Assistance		615.00
Stenographic Services for Editor		66.24
Editor's Expenses		6.50
Treasurer's Expenses		73.80
Express	$ 6.37	
Postage	36.92	
Letterheads	50.02	
Statements	78.69	
Secretary's Expense	8.00	
Exchange	6.26	
Transfer to Publication Fund Savings Account	4.00	
Refund of Bill Collected in Error	12.00	
Repurchase of Publication	6.75	
Refund of Dues Overpayment	6.00	215.01
Total Expenditures		$7,731.43

ANNUAL REPORT OF THE EDITOR

The Society published Volume 17 of *American Antiquity* and Memoir 8 for a total of 484 pages. This is 88 pages more than was printed in Volume 16. Memoir 8 contained 72 pages. The Memoir was assembled by Frederick Johnson; the symposium in Vol. 17, No. 4, by Frank H. H. Roberts, Jr. Volume 17 contained 26 Articles, 26 Facts and Comments, 31 Book Reviews, 28 Book Notices, 4 Notes and News sections, 2 obituaries and numerous notices.

The size of Volume 17 increased in the face of a $1,200 annual ($300 per issue) budgetary reduction for printing. I do not know how long we can continue to print 400 or more pages annually at the budget figure of $1,150 per issue. The editor can go only so far in holding down costs. It may be that Volume 18 will show shrinkage. In this connection, however, I am very pleased to report that the University of Utah Press has agreed to retain *American Antiquity* as a regular account. As some of you knew, the printing of the magazine has been on an issue-to-issue basis, but the expansion of the Press has come along satisfactorily and the Director has agreed to the retention of the account.

During the past year 60 manuscripts were received. Of these 9 were rejected, 6 were returned for modification; most of those returned for modification were revised and subsequently accepted.

NOTES AND NEWS

GENERAL

In the last issue, national and regional meetings and organizations were noted in this column. As this material is being prepared, several Americanists, accompanied by envy and good wishes, are on their way to major international assemblies at Cambridge and Vienna. Of value and importance at least rivalling these gatherings was the International Symposium last June in New York convened by the Wenner-Gren Foundation (Viking Fund) — this exceptionally well-planned and organized meeting is reported separately below, by two of the Assistant Editors who attended, A. D. Krieger and John Rowe.

Returning briefly to local and regional groups and periodicals — the *Archeological Newsletter* of the Upper Ohio Valley Archeological Survey (William J. Mayer-Oakes, Editor, Carnegie Museum, Pittsburgh) is now issued in a new and improved format, lithoprinted instead of mimeographed, beginning with No. 5, March 1952; the newly-established Oklahoma Anthropological Society issued its first Newsletter in April. (Dr. Robert E. Bell, Editor, University of Oklahoma, Norman). The Grave Creek Mound Museum at the site of the Grave Creek Mound in Moundsville, W. Va., operated by the West Virginia Archaeological Society, under supervision of Delf Norona, the society's secretary and editor, was opened to the public July 4, 1952. The museum is devoted to regional archeology, extending in time from the archaic people down to the historic Indians, with emphasis on the history of the Grave Creek mounds and the Adena culture.

Most of the next few paragraphs are lifted from that most useful newsletter, that of the Clearinghouse for Southwestern Museums (F. H. Douglas, Denver Art Museum, 1300 Logan St., Denver, Colo.).

The 1952 annual meeting of the Society for Applied Anthropology is to be held at Haverford College, Pennsylvania, Sept. 5-7. The American Association of Physical Anthropologists held its annual meeting at the New York Academy of Science, March 21-23. The Linguistic Institute for 1952 was held at Indiana University, June 18-August 15, sponsored by the Linguistic Society of America; it included intensive training in linguistic theory as well as in European languages and "primitive" languages.

The annual meeting of the American Folklore Society will be held in El Paso, December 22-23, jointly with the New Mexico group; the program chairman is Dr. Haldeen Braddy, Texas Western College, El Paso, Texas. The Colorado Archaeological Society held its annual meeting at Rocky Ford, Colo., July 12, with a field trip on July 13 to stone circles in the vicinity.

UNESCO has announced an international seminar on the role of museums in education, to be held at the Brooklyn Museum from Sept. 14 to Oct. 12. The number of participants is limited to 45, one person from each member state, but provision has been made for attendance by observers from international organizations in fields of art, science, and education.

A new medium for the publication of scholarly papers has been launched, under the title of "The Annals of American Research," by the Public Affairs Press in Washington. Inquiries should be addressed to the Editor, Annals of American Research, 2153 Florida Ave., N. W., Washington, D.C. (do not submit manuscripts without prior correspondence).

The Western States Branch of the American Anthropological Association has published News Bulletin No. 1, 1952, prepared and distributed by the group at Stanford, including information on activities of the Anthropology Departments of Stanford University and the University of Utah. In the American Anthropological Association *News Bulletin*, Vol. 6, No. 3, July 1952, there are full statements of important new developments in anthropology at the University of Colorado and University of Arizona.

As of July 1, the National Park Service took over direct supervision of the River Basin archaeological salvage program, outside the Missouri Basin, instead of transfering the funds obtained for this work to the Smithsonian Institution, as heretofore. The Smithsonian Institution will continue to handle the tremendous Missouri Basin project, and will also do certain specific jobs in the eastern U.S. (surveys, by Carl Miller, working out of Washington). Three field offices of the River Basin Surveys have been transferred from the Smithsonian Institution, accordingly, to the National Park Service — at Georgia (Joseph Caldwell), Austin, Texas (Edward B. Jelks), and Portland, Oregon (Joel Shiner). A splendid editorial by Carl Chapman on the importance and urgency of the River Basin archaeological salvage program appeared in the Missouri Archaeological Society *News Letter*, No. 56, Feb., 1952.

The date for the Tenth Plains Conference for Archaeology has not been set but an informal poll of field workers indicates that a date late in November, 1952, would be satisfactory.

EARLY MAN

The second year of excavation at the Lind Coulee site, which is located in the arid Columbia Basin region of central Washington, is being carried on under a grant from the National Park Service to the State College of Washington (Pullman), Richard Daugherty reports.

Lind Coulee, which would be called an arroyo in the Southwest, is a meandering gully with nearly vertical walls averaging nearly 20 feet in height. Its seasonal stream cuts its way through Pleistocene basalts and sands and recent sands, silts and loess until it terminates in the drainage of lower Crab Creek. The occurrence of several artifacts, flint chips, and bone fragments protruding from the eroding coulee wall evidenced the

existence of the site. At several points, lenses of fire-blackened earth were visible.

The excavations of 1951 produced more than 100 artifacts plus quantities of cultural refuse, including chipping debris, and burned and unburned bone fragments. A number of the partially mineralized bone fragments were identifiable, bison being most plentiful. None of the fragments of bison bones were of sufficiently diagnostic value to make species identification possible. At the present writing more than 200 artifacts have been found plus additional cultural debris. Included in the types of artifacts are long-stemmed projectile points, flake knives, flake scrapers, keeled scrapers, choppers, retouched flakes, 3 bone shafts, a serrated bone spear point, a small grinding stone with red ocher on it, and associated with the grinding stone a small hand stone, also with ocher on it.

Preliminary geological investigations strongly suggest that the Lind Coulee site might be the first "early man" site found in Washington. Results of radiocarbon tests on bone materials have not yet been received.

A very extensive preceramic site in Ontario, near Sheguindah on Manitoulin Island in the north of Georgian Bay, recently discovered and currently being investigated by Thomas E. Lee of the Canadian National Museum, is reported in the *New York Times* of July 6, 1952. Large quantities of stone implements have been found; the material is apparently much later than that of the well-known Killarney site.

CALIFORNIA

W. J. Wallace reports that a rock-shelter in southern Ventura County, previously unstudied, was recently examined and the pictographs on the ceiling recorded by a group from the Department of Anthropology of the University of Southern California. A report on the pictographs is being prepared.

A group of major students under Wallace's direction are preparing a report on the excavation of the Little Sycamore site, also in southern Ventura County, which was excavated by a U.S.C. class in archaeological field techniques during the spring. Several additional sites in Little Sycamore Canyon were to be mapped and tested during the summer.

Charles Rozaire is handling a salvage job on a large site at Encino in the San Fernando Valley. The site, reportedly a historic one, will soon be destroyed to make way for a golf-course clubhouse. It is littered with manos and metates, hammerstones, and crude core tools. Volunteer help from U.C.L.A., U.S.C., and the Archaeological Survey Association of Southern California, has assisted, Wallace adds.

An interesting site near Temecula in Riverside County is being excavated by E. B. McCown for the Archaeological Survey Association. A quantity of artifacts and a Spanish adobe structure have been found.

Wallace also kindly informs us that Al Mohr excavated in a large site in the Cachuma Reservoir area in Santa Barbara County for the River Basin Surveys during May of this year, and returned in the summer to continue the work. A large house pattern was unearthed, and artifacts which indicate that the site contains both Hunting and Canaliño components. Personnel assisting included students from U.S.C., U.C.L.A., and U.C. (Berkeley).

For a really interesting report in California archaeology, interpreting Phil C. Orr's findings on Santa Rosa Island, the Associate Editor cannot resist referring you back to *Time* for Feb., 4, 1952, as well as Orr's "Review of Santa Barbara Channel Archaeology," *SWJA* 8-2, Summer 1952, pp. 211-226.

NORTHERN PLAINS

Eight archaeological River Basin Surveys (Smithsonian Institution) parties, as well as one palaeontological, were in the field in the Missouri River basin during June and July — at the Oldham site, Fort Randall Reservoir, S. Dak. (Cumming), the Kropp and Hintze sites, James River, N. Dak. (Wheeler), the Nightwalkers Butte site, near Elbowoods, N. Dak. (Hartle), sites at the Oahe Dam, S. Dak. (Fenenga), the Whetstone site and "old" Fort Randall, S. Dak. (Mills), a large site at Fort Bennett, S. Dak. (Cooper), Fort Berthold II, army post of 1855-1874 (G. Hubert Smith), and on aerial photographic survey (Solecki).

Nine field parties of other institutions coöperating in the River Basin program in the Missouri were also at work — Nebraska State Historical Society near Chamberlain, S. Dak. (Marvin Kivett), University of Kansas at the Talking Crow site, S. Dak. (Carlyle Smith), University of Missouri on the Pomme de Terre River, Missouri (Carl Chapman), University of Montana in the Garrison Reservoir, N. Dak. (Carling Malouf), Laboratory of Anthropology of the University of Nebraska in the Harlan County Reservoir near Alma, Nebr. (John Champe and Don Lehmer), Nebraska State Museum at the Red Smoke site, Nebr. (C. B. Schultz and James Gunnerson), North Dakota Historical Society at Like-a-Fishhook village, N. Dak. (James Howard), University of Wyoming at site 48CK7 near Moorcroft, Wyo. (Bill Mulloy), and the University of South Dakota's W. H. Over Museum at the Thomas Riggs site north of Pierre, S. Dak. (Wesley Hurt).

SOUTHEAST

VIRGINIA. Investigations were carried on for the River Basin Surveys by Carl F. Miller of the Smithsonian Institution at the Buggs Island Reservoir (now renamed the John H. Kerr Reservoir), on the Roanoke River in southern Virginia, from April 17 to June 30. At one of the seven sites tested, stratigraphic material was found beginning with a late preceramic period and terminating sometime during the middle period of Woodland. Associated with the latter were 2 completely flexed burials accompanied by turtle carapaces. Miller had found a similar association during his previous work there, and in no case did the position of the carapaces indicate use as food containers.

FLORIDA. The University of Florida continued its survey activity on the Florida Gulf Coast in Levy County. A series of small Weeden Island shell mounds were found along the shore. With few exceptions they are mainly eroded away by wave action. Some test excavations were made in a rich but badly pothunted Weeden Island burial mound (Lv 2).

Other excavations were made in eastern Florida at Jones Creek near Jacksonville. This is an occupation site of the Orange Period carrying over into St. Johns Ia. It is remarkable for the strong Georgia influence in the latter occupation. Deptford and Savannah (?) pottery types were very important.

Glenn Allen, a student at Florida State University, is doing archaeological work on the northwest coast of Florida. To date excavations have been made on Dog Island and St. George Island.

John M. Goggin's monograph "Space and Time Perspective in Northern St. Johns Archeology, Florida" was published early in August in the Yale Publications in Anthropology. It interprets and summarizes data on 432 archeological sites ranging from paleo-Indian to historic periods.

GEORGIA. Excavations being carried out by Sheila Kelly Caldwell, at Darien (noted in the July issue of *American Antiquity*) were continued. A considerable number of postholes indicates buildings but their pattern has yet to be worked out. Of interest is what appears to be a small diamond-shaped structure (tower?) along a major wall line. The main part of the site, though, is clearly historic Indian with Spanish contacts, very possibly a mission. Goggin dates it, on the basis of Spanish majolica found, as being *circa* 1600-1650. Lewis H. Larsen, Jr., on behalf of the Georgia Historical Commission, is tackling, with success, the old problem of Spanish missions in coastal Georgia. Over a dozen sites have been found with Spanish pottery. That which can be dated is placed in the first half of the seventeenth century.

The historic Cherokee site of Tugaloo is being excavated under the supervision of William Edwards.

William Sears, University of Georgia, is continuing work at Kolomoki State Park. During this season he excavated mound F and mound B. The former contained only a small platform mound, evidently used for only a brief period. Mound B contained only a collection of large postholes scattered in a rather random fashion. The mound seems to have resulted from earth piled around the base of these poles.

LOUISIANA. James Ford excavated several test trenches in the Poverty Point site during May. As recently reported (*American Antiquity*, Vol. 18, No. 1, p. 96) there is a series of large concentric earthworks, octagonal in shape, and about ¾ mile in diameter. Centering on one of the sides of the octagon is one of the two large Poverty Point mounds, 70 feet in height and roughly "T" shaped. Apparently all this construction took place in prepottery times. Both in the ridges of the octagon and in the mound fill are found Poverty Point baked-clay objects in great number. In certain localized areas are found innumerable Jaketown "perforators." The prospect of correlating the age of the construction with history of the Mississippi drainage is seen in that an old channel of the Arkansas River has cut away a portion of the octagon. The results of this excavation are to be incorporated into the report on the Jaketown site by Ford, Philip Phillips, and William Haag, which was to go to press in September.

MISSOURI. The field school of the University of Missouri, directed by Carl Chapman, worked in the Table Rock Reservoir area, southwestern Missouri, in June and July, finding three occupations ranging from an archaic horizon to one comparable to Middle Mississippi.

OKLAHOMA. The field school of the University of Oklahoma, directed by R. E. Bell, carried on further salvage excavations, under a research contract with the National Park Service, at site 39 in the Tenkiller Ferry reservoir, eastern Oklahoma, during June and July. Forty flexed burials were found, a house and parts of two others, and minor features. A variety of stone and bone implements was found, and both shell-tempered and clay-tempered pottery. A preceramic archaic horizon is also found in the underlying clay layer. Bell now feels that the relationship of the upper deposits to the Turkey Bluff focus does not appear to be as close as has previously been suggested.

EAST TEXAS. E. B. Jelks of the River Basin Surveys field office at Austin completed excavations during the spring at the Texarkana Reservoir on Sulphur River.

SOUTHWEST

The 1952 Pecos Conference, annual gathering of Southwestern anthropologists, was held at Santa Fe by the Museum of New Mexico on August 11, 12, and 13, with sessions in both the Laboratory of Anthropology and the adjoining new International Museum of Folk Art. More than 100 anthropologists, almost all of them engaged in field work in the Southwest, attended, representing the University of New Mexico, Museum of New Mexico, University of Colorado Museum, University of Denver, Museum of Northern Arizona, University of Utah, University of Arizona and Arizona State Museum, Pueblo Grande, Heard Museum, Amerind Foundation, U.S. National Park Service, Denver Museum of Natural History, University of Michigan Museum, Morehead State College (Kentucky), Southern Illinois University, Panhandle-Plains Museum (Canyon, Texas), Peabody Museum (Harvard), Chicago Museum of Natural History, University of Chicago, University of California, University of Oregon, and other institutions.

A. V. Kidder was general chairman of the conference and presided over two sessions in which reports on the results of summer excavations, and other current archeological work, were given. Fred Eggan and W. W. Hill presided at ethnological report sessions. One morning was devoted to discussions of culture classifications, with

Jame B. Griffin presiding. After a review of the original Pecos Classification developed in 1927, and the later Hohokam and Mogollon sequences, Martin and Rinaldo's "The Southwestern Co-tradition" (*SWJA* 7-3, Autumn 1951, pp. 215-229) and Daifuku's "A New Conceptual Scheme for Prehistoric Cultures in the Southwestern United States" (*Amer. Anthrop.* 52-2, April 1952, pp. 191-200) were discussed at length. Much interest in the new classifications was evinced by those anthropologists engaged in teaching and museum interpretation, who felt they represented useful attempts at synthesis of available data. Further definition of Southwestern cultural areas was deemed necessary, and H. S. Colton was asked to appoint a committee to define areas and make further recommendations on these culture classifications at the next conference.

The antiquity of maize in the Southwest and the varieties found were briefly reviewed. Similarities and differences in the corn from Bat Cave and Tularosa Cave were discussed by Herbert Dick and John Rinaldo, and a report by Volney Jones on corn from Earl Morris' Durango Basketmaker sites was read by Griffin.

In honor of A. V. Kidder and the 25th anniversary of the original Pecos Conference, the Museum of New Mexico entertained the conferees at a picnic lunch at Pecos Pueblo. Dr. Kidder was presented with a miniature silver trowel engraved with the words "Pecos Conference, 1927-1952" in commemoration of the first meeting of Southwestern archaeologists at his camp twenty-five years ago.

Fred Wendorf of the Museum of New Mexico led a conducted tour to the site of Cuyamungue, a Tewa pueblo of the early historic period, where he has been excavating since early June.

The Museum of Northern Arizona will be host to the 1953 Pecos Conference at Flagstaff next summer.

SOUTH AMERICA

BRAZIL. William D. Hohenthal returned in June, 1952, from a year's ethnographic survey on the lower São Francisco River in northeastern Brazil, a project financed by a grant from the Social Science Research Council. Incidental to study of the surviving Indians of the area (Fulnió, Shucurú, Pancararú and numerous other groups in central Pernambuco and western Alagoas and on both banks of the São Francisco), Hohenthal visited a large number of archaeological sites and made extensive surface collections. His data will have considerable interest, since this part of Brazil is entirely unknown archaeologically.

Large rubbish sites, 50 by 100 meters or larger, are common on the islands of the São Francisco River above Petrolandia and on the western slopes of a number of ranges of hills on the Pernambuco side. They are marked by abundant surface sherds in the manioc patches of the present Indian inhabitants. Large burial urns, some containing bone fragments and others cremations, are commonly found in these sites. There are a lot of caves in the area, but only one, a burial cave at Itaparica dug many years ago by Carlos Estevão, is known to contain ancient remains. Bed rock mortars and metates are very common, sometimes as many as 50 occurring together. Pictographs are very abundant and consist mostly of simple geometric designs in white, red, yellow or black; as many as three of these colors may be used together in one figure.

The pottery is well fired, and of varying thickness and fineness of finish. It is generally sand tempered. Large pots and big square bowls (locally called alguidares) are common shapes. The finer pieces are painted with red or white lines; other sherds have punctations, thumb nail impressions, corrugations, and cord or textile impressions as decoration. Decorated sherds run to only about a third of the total found.

Clay pipes are very abundant. The commonest are elbow pipes, often anthropomorphic and showing the old style Indian crown-cut headdress. Tubular pipes and platform pipes are also found.

Stonework consists mostly of axes; plain, three quarter grooved, and modified anchor shapes are all found. The slab mortars used by the modern Indians are probably reused archaeological specimens. Beads of clay, bird bones, or snake ribs are found in the burial urns.

There is some evidence that part of the archaeological material is post contact. The Fulnió Indians report finding coins in some of the alguidares found in their territory, and many of the pipes have Christian crosses as part of the decoration. The area looks like a very promising one from the point of view of the possibility of establishing an archaeological chronology.

PERU. John Rowe, Assistant Editor for South America, attended the Wenner-Gren Symposium, and worked in the museums and libraries of New York, New Haven, Cambridge and Philadelphia on various Peruvian problems. The museum work was largely concerned with keros, the lacquered wooden cups which are such a characteristic feature of Inca art (cf. S. Linné, *Ethnos*, 1949:118-139). There is no direct evidence for dating these objects, since the known specimens were not excavated in archaeological context but purchased from descendants of the original owner, usually by dealers who kept no provenience record. Some inferences as to date can be made from the style and the motives of the designs, however. The lacquered style begins about the time of the Spanish conquest and lasts into the seventeenth century and very probably as late as the eighteenth. Earlier pieces have stiffer and less crowded designs, while in later ones the designs are freer and show a variety of scenes of Colonial life and Inca legend. One fine piece in the American Museum of Natural History has a scene identified by J. B. Bird as a battle between the forces of Huascar and Atahuallpa, while a specimen at Yale shows the capture of Huascar.

Junius Bird and his staff at the American Museum of Natural History have reorganized a large part of the Peruvian pottery exhibit, and one of the new cases displays a very ingenious reclassification of Nazca pottery which may well prove to be the key to the spatial and

temporal divisions within the style. Bird has set aside the widely used Gayton-Kroeber classification into subtypes labelled A, B and Y, presumed to follow one another in that order. His new arrangement envisages a "Cat-demon" style (Gayton-Kroeber A and part of B) existing beside and contemporary with a "Cactus Man" style (part of B and some other materials). After a period of independent existence, the two styles merge. Still later, and growing out of the merged style, is a derived style showing Tiahuanaco influence (roughly the Gayton-Kroeber Y). The equivalences given here with the Gayton-Kroeber classification are actually somewhat misleading, as Bird's classificatory criteria are entirely different and the two systems are not properly comparable. Bird's Nazca classification still needs much testing, but it is the most promising development in the Nazca problem in many years, and any Peruvianist who can make an opportunity to study the new exhibit should do so and give the matter some thought.

Richard P. Schaedel reports from Lima that a new Peruvian law provides for some decentralization of the government supervision of archaeological excavation in favor of the newly established regional museum and research center at Ica. The administrator of this center will have effective control over arrangements for excavations on the south Coast, and as the Ica authorities are eager to see some scientific archaeology done in their area, they would welcome proposals from qualified archaeologists for new field work in their jurisdiction. Schaedel, whose current address is Gonzales Larrañaga 122, Miraflores, Lima, Peru, will be glad to furnish further details to anyone interested.

PANAMA. Gordon R. Willey, J. N. East, and C. R. McGimsey, all of Peabody Museum, Harvard University, excavated several sites in western Panama during the period of January through April, 1952. In this work Willey was following up leads from the 1948 Smithsonian expedition into the same area, in which he had participated. The Monagrillo shell mound at the mouth of the Parita River was thoroughly excavated with a large yield of Monagrillo style pottery and numerous ground and chipped stone tools. Small camp sites of Coclé, or Coclé-related culture, were isolated at the site, and these proved to be clearly post-Monagrillo. This sequential relationship for western Panama, Monagrillo followed by Coclé-related wares, is, however, a mere beginning for the region. There is, obviously, a time gap between Monagrillo and Coclé which has not yet been filled. The Harvard University party discovered a new ceramic complex in the area which they are naming "Sarigua," but as yet this Sarigua style cannot be successfully fitted into any sequence picture. In addition to the Monagrillo and Sarigua excavations, stratitests were made in a deep (2.00 meters) Coclé-style refuse dump on the Santa Maria River. It is possible that some chronological information will be forthcoming from an anaylsis of the materials from these sites.

In response to a query about Sarigua pottery, Willey adds: "Sarigua pottery is unpainted or unslipped. The ware is brown, thin, and quite hard. As a class it is thinner and harder pottery than anything else in the area. It probably approaches some of the fine Chiriquí wares in these qualities, but it is unlike Chiriquí in other characteristics. Vessel forms include collared jars or ollas. Decoration is by fine-line incision, punctation, and thin appliqué stripping."

Mr. Morgan Smith, Mr. Robert Steinbach and Mr. Taizo Miake, students at Florida State University, are doing three months research in ethno-botany and archaeology in Panama. They are working mainly in the Guyami and Chono areas.

Dr. Hale G. Smith, Florida State University, is making an archaeological and ethnological reconnaissance of the Greater and Lesser Antilles, northern South America and Panama.

INTERNATIONAL SYMPOSIUM ON THE STATUS OF ANTHROPOLOGY

From June 9 to 20, 1952, the Wenner-Gren Foundation for Anthropological Research conducted an International Symposium on Anthropology at its headquarters in New York, to attempt an evaluation of the present status of anthropology in all its phases. Alfred L. Kroeber acted as its president. The Symposium climaxed six months of preparation by a planning committee composed of Kroeber, Bennett, Hoijer, Kluckhohn, Mandelbaum, Strong, and Washburn. This committee determined upon 50 subjects covering all the fields of anthropological research, then chose an authority in each field to prepare a comprehensive summary of present knowledge in that field, known as an "inventory paper." The authors were chosen, "not only for breadth of knowledge in their special fields, but for their ability to synthesize the work of others, and for their broad conception of anthropology as a whole."

In addition to the 51 authors of 50 inventory papers (37 from the United States, 10 from other nations, 4 absent), another group of 34 persons was invited (17 from the United States, 15 from other nations, 2 absent). The second group included those chosen to act as chairmen of individual sessions, or as discussants, or simply to lend their brains and opinions to the proceedings as problems developed. Of 85 persons invited altogether, from 18 countries, all but six were able to attend. The inventory papers were submitted to the Foundation in April, mimeographed, and sent to all participants well in advance of the meeting. Thus it was not necessary to take up time listening to authors read their papers, and the entire ten days of sessions were devoted to critical analysis and discussion. All discussion was recorded by stenotype and tape recorder.

The proceedings are to be published by the University of Chicago Press: the inventory papers as Vol. I, and the discussions as Vol. II. Archaeologists will be particularly interested in the following: two papers on

Long-Range Dating (Oakley, Heizer); The Strategy of Culture History (Rouse); Old World Paleolithic (Movius); Old World Neolithic (Childe); results of the historical approach in the New World, South America (W. C. Bennett), Mesoamerica (Caso), and Anglo-America (Krieger); Archaeological Theories and Interpretations, Old World (Grahame Clark), and New World (Willey); Historical Approach in Anthropology (Strong); Ecology (Bates); and Technological Aids (Rowe).

The other papers and discussions cover a great range of subjects: primates, fossil man, race, historical and structural linguistics, style, evolution and progress, evolutionary theory, techniques in linguistics, techniques in psychology, interview techniques, genetics, universal culture, folklore, culture and personality, acculturation, community study, national character, questions of value, strategy of physical anthropology, relation of anthropology to social sciences and humanities, applied human biology, growth and constitution; and applied anthropology in medicine, teaching, industry, and government (United States, British Africa, Netherlands, and United Nations). A final summary and integration was provided by Kroeber at the close of the sessions.

While it can hardly be expected that all of these far-flung subjects, each with innumerable special problems of procedure and analysis, could be adequately reviewed even in the space of two weeks, such a stock-taking marks a most constructive forward step in the history of anthropological research. Two principal themes guided the discussions: What do we know now? What should be done next to increase our knowledge?

The writers of inventory papers approached their subjects in a variety of different ways so that the results are somewhat difficult to compare. The papers by Heizer, Krieger, and Rowe, are catalogues of specific data, while others are general and philosophical in varying degrees. As examples of the interesting ideas sown throughout this group of studies, we might mention Oakley's classification of relative and absolute dates into eight types, suggesting a technique which could be fruitfully applied to warn the reader of the basis on which a given date rests; and a distinction drawn by Rouse between "classes" (hypothetical groups of artifacts arrived at by sorting in the light of every conceivable descriptive observation) and "types" (groups set up on the basis of selected criteria). Many of us have at some time or other set up "types" and then used them as if they were "classes."

The discussion at the actual sessions of the Symposium tended to concern itself with theoretical questions and the interrelations of the different branches of anthropology. The fact that the field of archaeology overlaps at some point with every other branch of anthropology, even with linguistics, emerged quite clearly from the remarks presented.

The Wenner-Gren Foundation, through its Director of Research, Paul C. Fejos, approached the Symposium idea with characteristic vigor and provided every conceivable facility, including the travel and living expenses of all participants. As a fitting close for the session, at the banquet on the last evening the participants honored Director Fejos for his effective labors in advancing anthropology during the past decade.

KIRK BRYAN MEMORIAL FUND

The following communication, of interest to North American archaeologists as well as to geologists, has been received from H. T. U. Smith, Geology Department, University of Kansas, and is heartily endorsed by the editorial staff of *American Antiquity*:

"Many friends of the late Professor Bryan have expressed the wish that a suitable memorial to him be established. It is generally felt that an appropriate memorial must be of lasting value and interest, should be aimed at stimulating work in the broad fields of research to which Professor Bryan contributed, and should represent his wide circle of friends in the different sciences. After informal discussion with a representative group of friends, colleagues, and former students, it appears that the establishment of a fund to support a Kirk Bryan Award is the preferred means of providing for the desired type of memorial.

"We are pleased to report that the Geological Society of America has agreed to administer a Bryan Memorial Fund, and to institute a Kirk Bryan Award, assuming this to be the plan which meets with general approval. It is intended that the award be made, at suitable intervals, for distinguished contributions to geomorphology or related fields in which Professor Bryan was actively interested. Provisional terms governing the memorial fund and the award include:

"1. The Kirk Bryan Award will be made to the author or authors of a published paper of distinction advancing the science of geomorphology or some related field, as Pleistocene geology. Preference will be given to younger men.

"2. The award to the author of the selected paper will include a cash stipend for encouragement of research, of whatever magnitude is deemed appropriate by the Society; the amount may vary from time to time depending on the proceeds available from the Kirk Bryan Memorial Fund.

"3. The recipient of the award will be selected by a committee appointed by the Society.

"4. The award generally will be made annually, but in any particular year may be withheld if no suitable paper is decided on, or if available funds are considered insufficient for the award. . . .

"5. The paper constituting the basis of the Award must fulfill the following requirements.

a. The paper will deal with geomorphology or with a bordering field, but related to geomorphology.

b. The paper will have been published not more than 5 years prior to its selection for the Award."

It is thought that a fund of some $5,000 will make possible an award appropriate for its intended purpose. Contributions and pledges of up to $100 each have been received already. Support for the memorial fund is being solicited at this time. Contributions may be sent directly to the Geological Society of America, 419 West 117th St., New York 27, earmarked for the Kirk Bryan Memorial Fund.

NOTE

At one of the sessions of Section H (Anthropology) of the American Association for the Advancement of Science at Philadelphia last December, attention was called to the fact that American scholars who are interested in the archaeology of the Old World — classical archaeologists, anthropologists, Egyptologists, Near Eastern archaeologists, and others who approach the subject from a background of history, linguistics or fine arts — for the most part have little contact with one another.

It was the consensus of the meeting that some simple and inexpensive organization might be formed to bring these people more in touch with one another and enable them to share information of value to them all. Some suggested activities were the preparation of a list or directory of the persons interested and the publication of annual bibliographies (selected and annotated) and annual reports of archaeological field work in all parts of Europe, Africa, Asia and Oceania and for all periods. Informal preliminary talks with many archaeologists later confirmed the impression that such an organization would be welcomed.

For further exploration of this possibility, a committee has been formed, consisting of members appointed by five different organizations, as follows:

Jotham Johnson (Archaeological Institute of America)

Bruce Howe (American School of Prehistoric Research)

Richard K. Beardsley (Section H of American Association for the Advancement of Science)

Robert J. Braidwood (American Schools of Oriental Research)

Lauriston Ward (American Anthropological Association) Chairman

The first meeting of this committee was held early in July, 1952, and a statement of proposed plans will probably be mailed at a later date to a large list of persons who might be interested. The committee will welcome suggestions, which may be addressed to Lauriston Ward, Peabody Museum, Harvard University, Cambridge, Mass., or to any other member of the committee.

AMERICAN NAME SOCIETY

This Society with a most remarkable purpose has just been organized. Some of our members will undoubtedly be interested. The sponsors include several persons known to archaeologists.

"In Detroit last December a group of scholars met in a conference on Onomastics and voted to organize the American Name Society for the purpose of promoting and encouraging the study of place names, personal names and scientific and commercial nomenclature. The new Society plans to publish a quarterly devoted to articles on names written by members.

"A Sponsoring Committee was appointed (thei names are listed below). Elsdon C. Smith was electe President. A meeting will be held in December, 1952, i Boston, to complete the organization.

"Those in the academic field, and others who ar interested in the subject, are cordially invited to becom members. The dues are: Active Member, $5.00; Sus taining Member, $25.00; Library Member, $5.00; an Patron, $1,000.00. The first year will end December 3 1953.

"Dues should be sent to Professor Erwin G. Gudde Treasurer, American Name Society, University of Cal ifornia Press, Berkeley 4, California."

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